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1868 # TEXTILE WORLD RECORD 1909

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"Matchings, Casings, Locks and Pieces."

Gov. Hughes' Committee on Speculation.

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Comparative Proportions of the Carded Wool and Worsted Industries in England.

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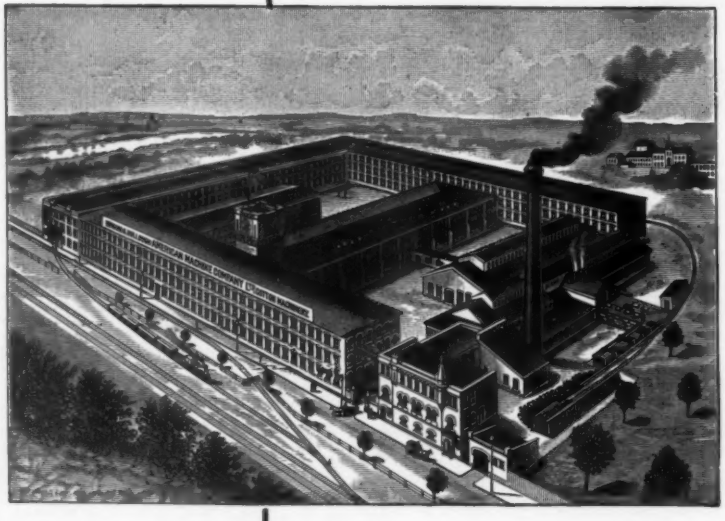

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VOL. 38 (NEW SERIES.) November, 1909 No. 2

Monthly Comment.

Report of Governor Hughes' Committee on Speculation.

The committee appointed by Governor Hughes last December to investigate speculation on exchanges made its report on June 7, at a time when it received very little attention because of the revision of the tariff, which was then in progress. The high prices for cotton now prevailing, the fact that professional speculators backed by great wealth are manipulating the cotton market, and the probability that these speculators will attempt to manipulate prices still further, combine to make the report of Governor Hughes' committee of special interest now. Accordingly we print in this issue a large part of the report, including all relating to cotton exchanges.

The report shows plainly that it is the result of a compromise. It admits that abuses exist in trading on exchanges, and favors leaving the remedy to the exchanges themselves, without interference by the strong arm of the law. There will be few to dispute the correctness of the admission as to the abuses, and still fewer who will agree with the committee as to the means for remedying them.

The members of the stock and commodity exchanges make speculation their profession. On the Cotton Exchange there are a large number of members who do not deal in spot cotton at all; their exclusive business is dealing in paper contracts to buy what they do not expect to receive, and to sell what they do not intend to deliver. It is an artificial and largely fictitious business, far removed from the real trade in cotton, and those who follow it have little or no sympathy with the cotton trade. As Governor Hughes' committee point out, this trading in paper contracts is necessary in order that the legitimate cotton trade may have a means of insurance against sudden, violent and ruinous fluctuations in values. Nevertheless it is from this trading in paper contracts that the abuses of gambling in commodities arise. To expect the members of the exchanges to remedy abuses by which they profit so greatly, requires far more confidence in human nature than is shown by the government in the regulation of any other branch of business. Gambling on cotton exchanges in all of its evil phases should be stamped out by statute, while retaining the system of trading in paper contracts which is necessary to safety in the cotton trade.

National Association of Woolen and Worsted Overseers.

The 27th annual meeting and banquet of this Association will be held at the American House, Boston, on November 16. Indications point to a large attendance, and there are a number of important questions coming up for consideration.

Conciliation in Cotton Manufacturing.

A deadlock was reached at last month's meeting in the negotiations between the employers and employes for an agreement for automatically regulating wages in English cotton mills. The proceedings have been secret and practically all that is known is that the representatives of the employers and employed have found it impossible to reconcile their opposing views to an extent that would warrant a continuance of the negotiations. The following statement was given out at the close of the conference:

> No actual progress was made on adjournment, no date was fixed for reassembling. Sir Edward Clarke undertook to send a memorandum to the representatives of the different bodies on the present stage of the negotiations.

William Mullin, the secretary of the Card and Blowing Operatives, Amalgamation, who represented his organization at the meeting, said:

> The masters have not yet submitted anything that we dare even so much as submit to our members, and it is my opinion that with the exception of the Chairman of the Federation (Mr. C. W. Macara) and one or two others, the general body of the masters do not want a Conciliation Board.

Interest now is centered in Sir Edward Clarke's report to the Board of Trade, which will give an account of the negotiations and, it is hoped, make clear to the public the points of difference between the mill owners and their employes. While this outcome is disappointing, it does not mean that the conciliation scheme is to be abandoned. Public sentiment is back of it. Moreover it is for the interests of both employers and employed to reach an agreement. The bane of the cotton trade in all countries at the present time is the disturbance of trade and industrial conditions. Strikes, lockouts, great fluctuations in the price of the raw material, these come frequently and usually unexpectedly to cause heavy losses to both the capitalist and the worker. It is not possible nor desirable to interfere with the price changes due to a change in supply and demand, nor with the wage changes due to legitimate causes. It is, however, of the utmost importance to prevent the fluctuations in the price of cotton due to speculative manipulation of the market, and to put an end to the unnecessary loss of employment because of the poor judgment, ignorance or injustice of either employers or employes. For these reasons the two pressing needs of the cotton trade are a system for the automatic regulation of wages, and an effective plan for eliminating gambling from the trade in raw cotton.

Lancashire's Error.

> It has been maintained by Mr. Macara that a price of seven or eight cents a pound for American middling would be high enough to enable growers to derive a profit from their labor and investments. . . . Recently Americans have taken from Europe a sum equal to £18,000,000 ($90,000,000) a year owing to the price of cotton being three pence per pound higher than what the International Federation regard as a nominal price. —Textile Mercury.

Such is the doctrine taught in that stronghold of free trade, Manchester, England. The International Federation's proposition regarding raw cotton is based on the erroneous assumption that the selling price of a product is fixed by the cost of it. There is not a cotton spinner or manufacturer in that Federation who sells the product of his mill on that principle. Every one of them sells for the highest market price, regardless of how much above the cost of production that selling price may be. That is an interchangeable law of trade, not only in manufactured cotton goods, but in raw cotton as well. The members of the International Federation accept that principle in selling their goods, but when it comes to buying raw cotton they permit their organization to promulgate the remarkable proposition that cotton should be sold for 7 to 8 cents a pound, because it costs less than that to grow it. The error is so evident that it cannot be made more so by demonstration.

The mystery about the proposition is that men as experienced, able and well trained as are the cotton spinners and manufacturers of Europe, should allow it to be fathered by their trade organization. And this mystery grows deeper when we consider that the proposition was formulated without taking the precaution of finding out what it costs to grow cotton. The evidence on this

point is clear. The 7 to 8 cent proposition was announced by Mr. Macara at the Zurich Congress in 1904, three years before he made in Mississippi his first investigation of the cost of growing American cotton. Until compelled to do so we shall refuse to believe either that the members of the European Cotton Federation are ready to subscribe to one principle in the purchase of raw cotton and to a conflicting principle in the sale of cotton goods, or that they believe Americans to be se dull as to accept the two propositions.

We admire the knowledge, skill, industry, persistence and general ability that Europeans have exhibited in the mechanical, chemical and commercial development of the cotton manufacturing industry. But our admiration is tempered by the skill, industry, persistence and general ability with which they stand in their own light on this raw cotton question. The high prices prevailing for raw cotton, so far as they are free from the influence of gambling on cotton exchanges, are the natural result of a disarrangement in the production of cotton and cotton goods. There are too many people, particularly in Lancashire, engaged in the production of cotton goods, and too few people engaged in the production of cotton in the American cotton belt. Until this disarrangement is corrected the trouble with the world's cotton manufacturing industry will recur with even greater frequency.

The high price for cotton which is now causing so much distress, particularly abroad, is the spur which nature applies for hastening the application of the only remedy. An ounce of prevention is, however, better than a pound of cure, and for years we have urged on the cotton trade the adoption of measures for preventing the difficulty it is now in. The trouble can be cured and prevented in only one way, an extension of cotton growing in the United States. What Lancashire should do now is what it should have done years ago, divert its energies from the building of cotton mills to the growing of cotton in America. Europe may persist as in the past in ignoring our friendly counsel, but we predict in that event that disaster will force the cotton manufacturers of Europe to promote, not cotton mill building, but instead, the emigration of desirable people to our Southern States.

A Southern Commercial Congress.

The second Southern Commercial Congress will be held at Washington on December 6th and 7th. The object is to make known to the world the truth about the South, its vast undeveloped resources and the opportunities it offers for the right kind of settlers. The reasons which led to the organization of the Southern Commercial Congress are summarized by its managers as follows:

1. That the South, through the gifts of nature in coastline, rivers, water-powers, mineral distribution, forest area, temperature and rainfall and unused agricultural lands, is positively destined for an enormous development.
2. That the greatest hindrance of the South lies within itself, in that the business men and leaders have not hitherto taken a broad enough view of the South's ultimate development and her men, therefore, have been lacking in an unwavering, affirmative attitude of mind.
3. That a cooperative publicity effort dealing with the general features of the South, but giving no attention to the development of individual enterprises, will create an impulse towards inquiry and will lead investigators to see that "the South means opportunity," and that our specific opportunities are greater than in either of the other two-thirds of the United States.

The following subjects are on the program to be considered at the coming Congress:

Opportunity for Southern propaganda in British Isles.
Colonization opportunities in the Southern States.
Opportunity latent in the Panama Canal.
Opportunity for Southern trade in South American Republics.
The South's advertising opportunities.
Southern statesmanship in conservation effort.
Commercial possibilities of shallow streams.
The good roads movement throughout the South.
Undeveloped port opportunities.
Hindrances and prospects in Southern iron and steel.
Neglected agricultural opportunities in the South.
Perpetuating the timber wealth of the South.
Manufacturing opportunities in the South.

Many of the most serious evils which affect not only industrial development, but society in general, can be traced to the un-

equal distribution of population. Few more striking illustrations of this can be found than that supplied by the cotton growing South and England. The former has an area of 720,000 square miles with a population of 15,891,256, or 22 per square mile; the latter has an area of 50,222 square miles and a population of 21,930,663, or 437 per square mile. The resources of the South are neglected to such an extent that it is necessary to carry on publicity campaigns to attract attention. On the other hand England is overcrowded to such an extent that the Distress Committees of that country recently held a conference at Manchester to devise ways and means for relieving the distress among the unemployed. Among other remedies proposed was emigration "to be restricted as far as possible to places within the Empire." The mistake in that proposition is in the restriction. The problem of the unemployed cannot be settled within such narrow limits. Let the Empire take its chances on even terms with the rest of the world. In England, a population of 437 per square mile, many of them in distress from lack of work; in the South, a population of 22 per square mile, with industrial development retarded by lack of people to do the work. In England many thousands out of employment because of a scarcity of cotton; in the South the cultivation of cotton restricted by a scarcity of men to do the work in the fields. The remedy for the difficulties in both countries is identical and obvious.

Cotton Consumed and Held by the Mills.

Every report by the International Cotton Federation of cotton consumed and held by the mills increases the value of these statistics. This is because of the greater number of years for which comparisons can be made, and the steadily increasing proportion of the world's cotton spindles covered by the returns. The last report for Aug. 31, 1909, includes returns from 115,971,004 spindles, or 88 per cent. of the estimated total of 131,503,062 spindles in all countries. We have summarized each of these international reports from the first one in 1905, and for a number of years have calculated the time the stocks of cotton would last the mills at the rate of consumption for the preceding year. The International Federation followed our example a year ago by giving an estimate of the number of days the stocks on hand Aug. 31, 1908, would last. We regret to note the omission of this feature from the Federation Census for Aug. 31, 1909, as it gives so clear an idea of the balance of supply and demand at the mill doors. We have, however, made this calculation for our readers, and the figures for Aug. 31, 1909, are here compared with those for the preceding years:

STOCKS AT FOREIGN MILLS.

Date	Spindle	Bales on hand	Bales used per week	Stocks will last
Aug. 31, '05	46,726,929	935,237	103,269	9 weeks.
Mar. 1, '06	54,297,537	1,237,180		
Aug. 31, '06	66,072,303	1,210,610	145,603	8.3 weeks.
Mar. 1, '07	71,054,503	1,911,071		
Aug. 31, '07	74,279,078	2,368,410	190,811	12.4 weeks.
Mar. 1, '08	78,984,106	2,342,127		
Aug. 31, '08	83,371,883	2,132,045	215,472	9.9 weeks.
Mar. 1, '09	85,906,697	2,425,127		
Aug. 31, '09	88,188,004	2,275,392	222,740	10.2 weeks.

STOCKS AT AMERICAN MILLS.

Date	Total Spindle	Bales on hand	Bales used per week	Stocks will last
Aug. 31, '05	23,687,495	776,801	82,288	9.4 weeks.
Aug. 31, '06	25,250,096	688,312	94,413	7.3 weeks.
Aug. 31, '07	26,242,000	996,000	95,904	10.4 weeks.
Mar. 1, '08	est. 27,000,000	1,089,119		
Aug. 31, '08	27,846,000	596,000	87,981	6.4 weeks.
Mar. 1, '09	27,846,000	1,831,800		
Aug. 31, '09	27,783,000	908,000	97,788	9.3 weeks.

The Compulsory Working of Patents.

A bill to compel the working in Australia of inventions protected by Australian patents is pending in the legislature of that Commonwealth. The measure meets with the opposition of shoe manufacturers, who fear it will interfere with their use of the machines built in the United States by the American Shoe Machinery Co. British owners of Australian patents are also protesting against the bill on the ground that it would be a great hardship for them to manufacture in Australia for the comparatively small market of that country. It seems,

however, that the bill is not as drastic as this protest implies. A deputation which appeared before the Australian authorities were told: "If you want a monopoly of the Commonwealth market you must manufacture your goods here, or else show that the article could not be made here owing to the limited market."

Matchings, Casings, Locks and Pieces.

Editor Textile World Record:

I would like to have you define the terms, "matchings," "casings," "locks" and "pieces" as used in the foreign wool trade. I would also like to know how wools answering these descriptions are classed under the Payne tariff.

London Smoke (1126).

This question was referred to our English correspondent, who made careful inquiries in the Bradford trade and reported as follows:

As to locks, pieces, matchings and casings I have catechised a number of people in different branches of the industry and find a variance of opinion as to the exact meanings of the terms. I summarize the findings up to date. Locks and pieces according to one authority are the same thing, are skirtings of fleeces removed for the benefit of the remainder or are droppings, by-products as it were, of the handling process. In another view locks and pieces are different things. A "piece" is a piece broken from a fleece and is larger than a "lock." It is agreed that they are oddments. Locks as shipped from the colonies contain more seed, straw, etc., than fleeces of the same type and this may be due to bulking them on the floor of the shearing shed or to careful picking over of fleeces before packing at the station. If more locks and pieces appear than in former times, the fact may be due to the extension of mixed farming. Under the Australian land laws large sheep runs are being broken up and small farmers with mixed stock, including perhaps 200 to 300 head of sheep are sending wool to market. Naturally they have not the system and facilities of the large station holders and their stuff is bagged up to be sorted and packed either at the coast or at Bradford. Locks and pieces are thus made wherever the wool is dressed and overhauled.

Matchings and casings are terms with different values. If one walked into a Bradford wool merchant's place and asked whether he had any "matchings," he would ask what quality, and then would show wool which had been sorted and classed so as to be all of one fineness.

"Casing" is a term used to signify sorting by fleeces. I am told it is called "grading" in the States. The merchant "cases" or classes fleeces as hoggs (yearlings) or wethers (i. e., from older sheep). He takes a fleece which is perhaps 32s to 40s quality in its different parts, "cases" it as 36s average and throws it into the bin intended for the 36s sort. It is guessing at the derivation of the term to say it arises from this action of throwing into the right "case" or bin, but the explanation looks probable.

I have defined matching and casing but you presumably use these terms as contractions for "matching locks" and "casing locks." The locks in that event are, according to our version, the product of the operations bearing the same name. Another version is that matchings and casings may have their origin in the breakup of large land holdings to which I have previously referred.

I have said that this wool from small farms comes to Bradford or elsewhere practically without treatment and in relatively small and mixed parcels. Dealers sort out the material from different sources and put together wool of the same quality and similar condition as to grease. They "match" wools to each other, or "case" them together. And as I am reliably informed, pack them up in specially imported colonial tares with "Australian Produce" stenciled very big on the sides and ship them to America from Bradford. The wool may or may not be all Australian.

I omitted to say earlier that locks and pieces in the view of the half dozen people I have asked are distinct from "bellies."

And I might have said, as you probably know, that the largest growers in Australia are very punctilious in their packing. They take out the worst portions of fleeces in order to secure the top prices for the bulk and sell these off-skirtings separately. In an ancient and subdivided industry like ours there are naturally different meanings attached to the same word and in some branches designations are given which are not used at all in others. We have dealers in English wools forming a class quite by themselves, dealers in merino who barely touch crossbreds, and dealers in crossbreds who seldom handle merino wool, so that the exact meaning of a trade term differs from one to another and perhaps suffers changes from use by people who deal in wool of all sorts. The dealing is by sample rather than by name.

As to the exportation of locks and pieces to the United States, you will understand the difficulty of proving a universal negative, but I am thoroughly satisfied that if done at all this must be on a very small scale. I have to rely on others for my information and my informants, who include neighbors, school friends and others on whose word implicit reliance can be placed; one and all are ignorant of any business in locks and pieces for the States. It is precisely locks and pieces that your buyers will not have and the locks and pieces left behind go to Germany and to our heavy woolen district in tons.

If your questioner wants to know whether "matchings" are being imported, the said "matchings" being wound together as if they formed a fleece, they are of course right. The wool trade with the United States is in "matchings" or "casings" and one would not be far wrong in saying that everybody in the business is sending only the best parts of the fleece to America. Wool is "cased" for America here and in Australia and I am bound to believe that to this practice reports refer. If locks and pieces are wanted why remove them from the fleece, as the almost invariable practice is? Why any "cased" wool at all? Regent.

Paragraph 368 of the Payne tariff contains the following provision:

> The duty upon wool of the sheep or hair of the camel, Angora goat, alpaca, and other like animals, of class one and class two, which shall be imported in any other than ordinary condition, or which has been sorted or increased in value by the rejection of any part of the original fleece, shall be twice the duty to which it would be otherwise subject.

It is generally understood that "locks and pieces" are dutiable at a double rate under this paragraph. It would also seem as if "matchings" as described by "Regent," would also come under this paragraph. We have been informed that consignments of "matched" wool from Bradford to this country have been recently held up and assessed at the double rate under paragraph 368, and that as a result the wool is now being imported in the original condition and "matched" in the United States.

FACTS CONTROLLING COTTON PRODUCTION.

BY JAMES M. JOHNSON, ASSOCIATE EDITOR, IN THE COTTON JOURNAL.

The extent of territory over which any crop may be produced is limited by two factors, climate and soil, each aiding and supplementing the other. Climate, especially over any considerable area, is beyond the control of man. Soil within limits can be and is controlled and modified by human agencies, but usually at very heavy cost. The possibility of producing a plant or crop extends to a much wider territory than does the probability of its production, while the range of its profitable cultivation is confined to still narrower limits.

It is possible to grow cotton as far north as Pennsylvania and Illinois, but it is not probable that it will be done in any other than an experimental way and as a matter of amusement and diversion and on a very small scale at that. At the present time cotton is grown, to a limited extent it is true, in Virginia, Kentucky, Missouri and Kansas. We have our serious doubts, though, in regard to there being any great profit coming to the grower of the fiber in the States mentioned.

Throughout the South Atlantic and the Gulf Coast States climate and soil are exceptionally favorable to the crop. Neither climate nor soil in this favored region can be correctly reckoned with as the factor controlling the present cotton production. Any thoughtful farmer knows that a little better preparation of the soil before planting time, a little quicker and more efficient use of the hoe at chopping time, and more liberal and rational use of the cultivator during the growing period result in a larger yield per acre planted to the fleecy staple. Almost every year there is a great deal of cotton left in the field long after it should have been picked out. There is a heavy loss in quality due to exposure to wind and rains and there is also heavy losses in quantity by the staple being beaten and blown from the bolls. There is something responsible for all this; but it is well to notice another fact before attempting to locate and recognize the limiting element.

A survey of the cotton belt gives one the impression that everything, all available land is planted to the crop and that there is no place for any more. Upon closer examination, though, a different conclusion is reached. Of the land in the South really suited to the cotton plant not more than one acre out of every ten is now devoted to it. It is not climate, it is not fertility of the soil that is limiting the production, neither is it the amount of land adapted by nature to the crop. Labor is the limiting factor. Each year sees many more acres planted than is ever chopped to a stand and kept free from grass and weeds. Labor to swing the hoe is limited. There is a limit to the area a hand with a hoe can get over. It is that which determines the number of acres chopped to a stand. More cotton is chopped to a stand and cultivated up to the opening period than ever has the lint picked from it in the very best condition; that is, in condition contributing most to its value. Labor to gather the crop in the best manner is not available. Put more hoe hands in the fields in April, May and June, and more pickers or those of greater efficiency in the fields in September, October, November and December, and more cotton will be produced.

Wages which can and will be paid are one of the strongest factors in determining the number, character and efficiency of laborers which will engage in a definite work. The price for which the product of that labor sells determines the wage which can be paid. It then seems that the price which cotton brings, not for one year alone, but through a period of several taken together, is the factor that is now controlling the output.

Selling price of the product, the wages paid to the producer, the amount and character of the labor employed on the soil, and finally the climate are the controlling factors. Of these, the average price of cotton for a long period of years is perhaps the most influential, as it determines the use to be made of the others.

A SOUTHERN VIEW OF THE COTTON SITUATION.

Charlotte, N. C., Oct. 27, 1909.

Editor Textile World Record:

The farmers have never perhaps sold cotton so rapidly as they have this year, because they feared a decline in the price. The money received has enabled them to settle their indebtedness early and hold what cotton there is left to be disposed of at their own price. Shipments to Europe have been unusually large and if the crop is as short as reported the curtailment of the mills will not have the effect of forcing lower prices on raw cotton, for the farmer can afford to wait. The heavy buying by European mills, a shortage of 700,000 to 1,000,000 bales, and the small stock of cotton left in the hands of farmers who are unusually independent because of the high price received early in the season, are conditions which will more than balance the effect of the proposed curtailment of production by the mills.

Mobile.

The United Kingdom purchased from the United States in 1907 over $227,695,481 worth of raw cotton, more than 70 per cent. of the total amount consumed in British mills. It exported in the same year over $536,282,775 of cotton manufactures as compared with $25,965,274 exported from the United States.

Report of Governor Hughes' Committee on Speculation.

New York, June 7, 1909.

Hon. Charles E. Hughes, Governor, Albany, N. Y.

Dear Sir: The committee appointed by you on December 14, 1908, to endeavor to ascertain

"what charges, if any, are advisable in the laws of the State bearing upon speculation in securities and commodities, or relating to the protection of investors, or with regard to the instrumentalities and organizations used in dealings in securities and commodities which are the subject of speculation,"

beg leave to submit the following report:

We have invited statements from those engaged in speculation and qualified to discuss its phases; we have taken testimony offered from various sources as to its objectionable features; we have considered the experience of American States and of foreign countries in their efforts to regulate speculative operations. In our inquiry we have been aided by the officials of the various exchanges, who have expressed their views both orally and in writing, and have afforded us access to their records.

THE SUBJECT IN GENERAL.

Markets have sprung into being wherever buying and selling have been conducted on a large scale. Taken in charge by regular organizations and controlled by rules, such markets become exchanges. In New York city there are two exchanges dealing in securities and seven in commodities. In addition there is a security market, without fixed membership or regular officers, known as the "Curb." The exchanges dealing in commodities are incorporated, while those dealing in securities are not.

Commodities are not held for permanent investment, but are bought and sold primarily for the purpose of commercial distribution; on the other hand, securities are primarily held for investment; but both are subjects of speculation. Speculation consists in forecasting changes of value and buying or selling in order to take advantage of them; it may be wholly legitimate, pure gambling, or something partaking of the qualities of both. In some form it is a necessary incident of productive operations. When carried on in connection with either commodities or securities it tends to steady their prices. Where speculation is free, fluctuations in prices, otherwise violent and disastrous, ordinarily become gradual and comparatively harmless.

Moreover, so far as commodities are concerned, in the absence of speculation, merchants and manufacturers would themselves be forced to carry the risks involved in changes of prices and to bear them in the intensified condition resulting from sudden and violent fluctuations in value. Risks of this kind which merchants and manufacturers still have to assume are reduced in amount, because of the speculation prevailing; and many of these milder risks they are enabled, by "hedging," to transfer to others. For the merchant or manufacturer the speculator performs a service which has the effect of insurance.

In law, speculation becomes gambling when the trading which it involves does not lead, and is not intended to lead, to the actual passing from hand to hand of the property that is dealt in. Thus, in the recent case of Hurd vs. Taylor (181 N. Y., 231), the Court of Appeals of New York said:

> The law of this State as to the purhase and sale of stocks is well settled. The purchase of stocks through a broker, though the party ordering such purchase does not intend to hold the stocks as an investment, but expects the broker to carry them for him with the design on the part of the purchaser to sell again the stocks when their market value has enhanced is, however speculative, entirely legal. Equally so is a "short sale," where the seller has not the stock he assumes to sell, but borrows it and expects to replace it when the market value has declined. But to make such transactions legal, they must contemplate an actual purchase or an actual sale of stocks by the broker,

or through him. If the intention is that the so-called broker shall pay his customer the difference between the market price at which the stocks were ordered purchased and that at which they were ordered sold, in case such fluctuation is in favor of the customer, or that in case it is against the customer, the customer shall pay the broker that difference, no purchases or sales being made, the transaction is a wager and thereore illegal. Such business is merely gambling, in which the so-called commission for purchases and sales that are never made is simply the percentage which in other gambling games is reserved in favor of the keeper of the establishment.

This is also the law respecting commodity transactions.

The rules of all the exchanges forbid gambling as defined by this opinion; but they make so easy a technical delivery of the property contracted for, that the practical effect of much speculation, in point of form legitimate, is not greatly different from that of gambling. Contracts to buy may be privately offset by contracts to sell. The offsetting may be done, in a systematic way, by clearing houses, or by "ring settlements." Where deliveries are actually made, property may be temporarily borrowed for the purpose. In these ways, speculation which has the legal traits of legitimate dealing may go on almost as freely as mere wagering, and may have most of the pecuniary and immoral effects of gambling on a large scale.

TWO KINDS OF SPECULATION.

A real distinction exists between speculation which is carried on by persons of means and experience, and based on an intelligent forecast, and that which is carried on by persons without these qualifications. The former is closely connected with regular business. While not unaccompanied by waste and loss, this speculation accomplishes an amount of good which offsets much of its cost. The latter does but a small amount of good and an almost incalculable amount of evil. In its nature it is in the same class with gambling upon the race-track or at the roulette table, but is practiced on a vastly larger scale. Its ramifications extend to all parts of the country. It involves a practical certainty of loss to those who engage in it. A continuous stream of wealth, taken from the actual capital of innumerable persons of relatively small means, swells the income of brokers and operators dependent on this class of business; and insofar as it is consumed like most income, it represents a waste of capital. The total amount of this waste is rudely indicated by the obvious cost of the vast mechanism of brokerage and by manipulators' gains, of both of which it is a large constituent element. But for a continuous influx of new customers, replacing those whose losses force them out of the "street," this costly mechanism of speculation could not be maintained on anything like its present scale.

THE PROBLEM TO BE SOLVED.

The problem, wherever speculation is strongly rooted, is to eliminate that which is wasteful and morally destructive, while retaining and allowing free play to that which is beneficial. The difficulty in the solution of the problem lies in the practical impossibility of distinguishing what is virtually gambling from legitimate speculation. The most fruitful policy will be found in measures which will lessen speculation by persons not qualified to engage in it. In carrying out such a policy exchanges can accomplish more than legislatures. In connection with our reports on the different exchanges, as well as on the field of investment and speculation which lies outside of the exchanges, we shall make recommendations directed to the removal of various evils now existing and to the reduction of the volume of speculation of the gambling type.

MANIPULTION OF PRICES.

A subject to which we have devoted much time and thought is that of the manipulation of prices by large interests. This falls into two general classes:

(1) That which is resorted to for the purpose of making a market for issues of new securities.

(2) That which is designed to serve merely speculative purposes in the endeavor to make a profit as the result of fluctuations which have been planned in advance.

The first kind of manipulation has certain advantages, and when not accompanied by "matched orders" is unobjectionable per se. It is essential to the organization and carrying through of important enterprises, such as large corporations, that the organizers should be able to raise the money necessary to complete them. This can be done only by the sale of securities. Large blocks of securities, such as are frequently issued by railroad and other companies, cannot be sold over the counter or directly to the ultimate investor, whose confidence in them can, as a rule, be only gradually established. They must therefore, if sold at all, be disposed of to some syndicate, who will in turn pass them on to middlemen or speculators, until, in the course of time, they find their way into the boxes of investors. But prudent investors are not likely to be induced to buy securities which are not regularly quoted on some exchange, and which they cannot sell, or on which they cannot borrow money at their pleasure. If the securities are really good and bids and offers bona-fide, open to all sellers and buyers, the operation is harmless. It is merely a method of bringing new investments into public notice.

The second kind of manipulation mentioned is undoubtedly open to serious criticism. It has for its object either the creation of high prices for particular stocks, in order to draw in the public as buyers and to unload upon them the holdings of the operators, or to depress the prices and induce the public to sell. There have been instances of gross and unjustifiable manipulation of securities, as in the case of American Ice stock. While we have been unable to discover any complete remedy short of abolishing the Stock Exchange itself, we are convinced that the Exchange can prevent the worst forms of this evil by exercising its influence and authority over the members to prevent them. When continued manipulation exists it is patent to experienced observers.

"WASH SALES" AND "MATCHED ORDERS."

In the foregoing discussion we have confined ourselves to bona-fide sales. So far as manipulation of either class is based upon fictitious or so-called "wash sales," it is open to the severest condemnation, and should be prevented by all possible means. These fictitious sales are forbidden by the rules of all the regular exchanges, and are not enforceable at law. They are less frequent than many persons suppose. A transaction must take place upon the floor of the Exchange to be reported, and if not reported does not serve the purpose of those who engage in it. If it takes place on the floor of the Exchange, but is purely a pretence, the brokers involved run the risk of detection and expulsion, which is to them a sentence of financial death. There is, however, another class of transactions called "matched orders," which differ materially from those already mentioned, in that they are actual and enforceable contracts. We refer to that class of transactions, engineered by some manipulator, who sends a number of orders simultaneously to different brokers, some to buy and some to sell. These brokers, without knowing that other brokers have countervailing orders from the same principal, execute their orders upon the floor of the Exchange, and the transactions become binding contracts; they cause an appearance of activity in a certain security which is unreal. Since they are legal and binding, we find a difficulty in suggesting a legislative remedy. But where the activities of two or more brokers in certain securities become so extreme as to indicate manipulation rather than genuine transactions, the officers of the Exchange would be remiss unless they exercised their influence and authority upon such members in a way to cause them to desist from such suspicious and undesirable activity. As already stated, instances of continuous manipulation of particular securities are patent to every experienced observer, and could without difficulty be discouraged, if not prevented, by prompt action on the part of the Exchange authorities.

CORNERS.

The subject of corners in the stock market has engaged our attention. The Stock Exchange might properly adopt a rule provid-

ing that the governors shall have power to decide when a corner exists and to fix a settlement price, so as to relieve innocent persons from the injury or ruin which may result therefrom. The mere existence of such a rule would tend to prevent corners.

FAILURES AND EXAMINATION OF BOOKS.

We have taken testimony on the subject of recent failures of brokers, where it has been discovered that they were insolvent for a long period prior to their public declaration of failure, and where their activities after their insolvency not only caused great loss to their customers, but also, owing to their efforts to save themselves from bankruptcy, worked great injury to innocent outsiders. For cases of this character, there should be a law analogous to that forbidding banks to accept deposits after insolvency is known; and we recommend a statute making it a misdemeanor for a broker to receive any securities or cash from any customer (except in liquidating or fortifying an existing account), or to make any further purchases or sales for his own account, after he has become insolvent; with the provision that a broker shall be deemed insolvent when he has on his books an account or accounts which, if liquidated, would exhaust his assets, unless he can show that he had reasonable ground to believe that such accounts were good.

The advisability of requiring by State authority an examination of the books of all members of the Exchange, analogous to that required of banks, has been urged upon us. Doubtless some failures would be prevented by such a system rigidly enforced, although bank failures do occur in spite of the scrutiny of the examiners. Yet the relations between brokers and their customers are of so confidential a nature that we do not recommend an examination of their books by any public authority. The books and accounts of the members of the Exchange should, however, be subjected to periodic examination and inspection pursuant to rules and regulations to be prescribed by the Exchange, and the result should be promptly reported to the governors thereof.

EXCHANGES CAN REFORM THEMSELVES.

It is vain to say that a body possessing the powers of the board of governors of the Exchange, familiar with every detail of the mechanism, generally acquainted with the characteristics of members, cannot improve present conditions. It is a deplorable fact that with all their power and ability to be informed, it is generally only after a member or a firm is overtaken by disaster, involving scores or hundreds of innocent persons, and causing serious disturbances, that the Exchange authorities take action. No complaint can be registered against the severity of the punishment then meted out; but in most cases the wrongdoing thus atoned for, which has been going on for a considerable period, might have been discovered under a proper system of supervision, and the vastly preponderant value of prevention over cure demonstrated.

THE COMMODITY EXCHANGES.

Of the seven commodity exchanges in the city of New York, three dealing with Produce, Cotton, and Coffee, are classed as of major importance; two organized by dealers in Fruit and Hay, are classed as minor; and two others, the Mercantile (concerned with dairy and poultry products) and the Metal (concerned with mining products) are somewhat difficult of classification, as will appear hereafter.

THE MAJOR EXCHANGES.

The business transacted on the three major exchanges is mainly speculative, consisting of purchases and sales for future delivery either by those who wish to eliminate risks or by those who seek to profit by fluctuations in the value of products. "Cash" or "spot" transactions are insignificant in volume.

The objects, as set forth in the charters, are to provide places for trading, establish equitable trade principles and usages, obtain and disseminate useful information, adjust controversies, and fix by-laws and rules for these purposes.

Trading in differences of price and "wash sales" are strictly prohibited under penalty

of expulsion. All contracts of sale call for delivery, and unless balanced and cancelled by equivalent contracts of purchase, must be finally settled by a delivery of the merchandise against cash payment of its value as specified in the terms of the contract; but the actual delivery may be waived by the consent of both parties. Possession is for the most part transferred from the seller to the purchaser by warehouse receipts entitling the holder to the ownership of the goods described.

DEALING IN "FUTURES."

The selling of agricultural products for future delivery has been the subject of much controversy in recent years. A measure to prohibit such selling, known as the Hatch Anti-Option bill, was debated at great length in Congress during the years 1892, 1893, and 1894. Although it passed both House and Senate in different forms, it was finally abandoned by common consent. As shown hereafter, similar legislation in Germany has proved injurious; and when attempted by our States it has either resulted detrimentally or been inoperative. The subject was exhaustively considered by the Industrial Commission of Congress which in 1901 made an elaborate report (Vol. VI), showing that selling for future delivery, based upon a forecast of future conditions of supply and demand, is an indispensable part of the world's commercial machinery, by which prices are, as far as possible, equalized throughout the year to the advantage of both producer and consumer. The subject is also treated with clearness and impartiality in the Cyclopedia of American Agriculture, in an article on "Speculation and Farm Prices"; where it is shown that since the yearly supply of wheat, for example, matures within a comparatively short period of time somebody must handle and store the great bulk of it during the interval between production and consumption. Otherwise the price will be unduly depressed at the end of one harvest and correspondingly advanced before the beginning of another.

Buying for future delivery causes advances in prices; selling short tends to restrain inordinate advances. In each case there must be a buyer and a seller and the interaction of their trading steadies prices. Speculation thus brings into the market a distinct class of people possessing capital and special training who assume the risks of holding and distributing the proceeds of the crops from one season to another with the minimum of cost to producer and consumer.

HEDGING.

A considerable part of the business done by these exchanges consists of "hedging." This term is applied to the act of a miller, for example, who is under contract to supply a given quantity of flour monthly throughout the year. In order to insure himself against loss he makes a contract with anybody whom he considers financially responsible, to supply him wheat at times and in quantities needed. He "hedges" against a possible scarcity and consequent rise in the price of wheat. If the miller were restricted in his purchases to persons in the actual possession of wheat at the time of making the contract he would be exposed to monopoly prices. If the wheat producer were limited in his possibilities of sale to consumers only, he would be subjected to the depressing effects of a glut in the market in June and September, at times of harvest.

To the trader, manufacturer, or exporter, the act of transferring the risk of price fluctuations to other persons who are willing to assume it, has the effect of an insurance. It enables him to use all of his time and capital in the management of his own business instead of devoting some part of them to contingencies arising from unforeseen crop conditions.

ALTERNATIVE CONTRACTS.

In order to eliminate the risk of a shortage of specific grades of the merchandise thus traded in, contracts generally permit the delivery of alternative grades, within certain limits, at differential prices; and if the grade to be delivered be not suitable for the ultimate needs of the purchaser, it can under ordinary circumstances be exchanged for the grade needed, by the payment of the differential. It is true that in this exchange

of grades there is sometimes a loss or a profit, owing to some unexpected diminution or excess of supply of the particular grade wanted, due to the weather or other natural causes.

Deposits of cash margins may be required mutually by members at the time of making contracts, and subsequent additional ones if market fluctuations justify.

Dealings for outsiders are usually upon a 10 per cent. margin; obviously if this margin were increased generally, say to 20 per cent., a considerable part of the criticism due to losses in speculation, particularly as to the Cotton Exchange, would be eliminated.

The major part of the transactions are adjusted by clearing systems, the method most prevalent being "ring settlements," by which groups of members having buying and selling contracts for identical quantities, offset them against each other, cancelling them upon the payment of the differences in prices.

THE PRODUCE EXCHANGE.

The New York Produce Exchange was chartered by the Legislature in 1862, under the style of the "New York Commercial Association." The charter has been amended several times; in 1907 dealing in securities, as well as in produce, was authorized. There are over 2,000 members, but a large number are inactive. Some members are also connected with the Stock and Cotton Exchanges. The business includes dealing in all grains, cottonseed oil, and a dozen or more other products; wheat is, however, the chief subject of trading, and part thereof consists of hedging by and for millers, exporters, and importers, both here and abroad. The quantity of wheat received in New York in the five years 1904-1908 averaged 21,000,000 bushels annually. No record of "cash" sales is kept. The reported sales of "futures" show in five years an annual average of 480,000,000 bushels, the year 1907 showing 610,000,000. Although some of these sales were virtually bets on price differences, all of them were contracts enforceable at law.

CLEARING SYSTEM.

The greater part of the transactions are settled by a clearing system. The Clearing Association is a separate organization, duly incorporated, with a capital of $25,000. All members of the association must settle daily by the clearing system; other members of the Exchange may do so. The Clearing Association assumes responsibility for the trades of all its members, and accordingly controls the exaction of margins from members to each other, and may increase them at any time if the fluctuations require it. The records of the clearings show day by day the status of each member's trading—how much he may be "long" or "short" in the aggregate. Thus the members have a system of protection against each other; the welfare of all depends upon keeping the commitments of each within safe limits. The official margin system operates as a commendable restraint upon over-speculation.

From our examination of the trading in mining stocks recently introduced, we conclude that the lack of experience of this body in this class of business has resulted in a neglect of proper safeguards to the investor and an undue incitement to speculative transactions of a gambling nature, and should not be tolerated on the Produce Exchange.

THE COTTON EXCHANGE.

The New York Cotton Exchange was incorporated by a special charter in 1871. Its membership is limited to 450. It is now the most important cotton market in the world, as it provides the means for financing about 80 per cent. of the crop of the United States and is the intermediary for facilitating its distribution. In fact, it is the world's clearing house for the staple. Traders and manufacturers in Japan, India, Egypt, Great Britain, Germany, France, and Spain, as well as the United States, buy and sell here daily and the business is still increasing.

Cotton is the basis of the largest textile industry in the world. The business is conducted on a gigantic scale in many coun-

tries, by means of vast capital, complicated machinery, and varied processes involving considerable periods of time between the raw material and the finished product. Selling for future delivery is necessary to the harmonious and uninterrupted movement of the staple from producer to consumer. Nearly all the trading, beginning with that of the planter, involves short selling. The planter sells to the dealer, the dealer to the spinner, the spinner to the weaver, the weaver to the cloth merchant, before the cotton of any crop year is picked. Dealers who take the risk of price fluctuations insure all the other members of this trading chain against losses arising therefrom and spare them the necessity of themselves being speculators in cotton. The risks connected with raising and marketing cotton must be borne by some one, and this is now done chiefly by a class who can give their undivided attention to it.

GRADING OF COTTON.

The grading of cotton is the vital feature of the trade. When no grade is specified in the contract, it is construed to be middling. There are now eighteen grades ranging from middling stained up to fair. This classification differs somewhat from that of other markets, and last January the Department of Agriculture at Washington took up the subject of standardizing the various grades for all American markets. The New York Cotton Exchange participated in this work; a standard was thus adopted, the types of which were supplied by its classification committee. It varies but little from the one previously in use here. The samples chosen to represent the several types are now sealed, in possession of the Department of Agriculture, awaiting the action of Congress.

The cotton plant is much exposed to vicissitudes of the weather. A single storm may change the grade of the crop in large sections of the country. It becomes necessary therefore to provide some protection for traders who have made contracts to deliver a particular grade which has become scarce by an accident which could not be foreseen. For this purpose alternative deliveries are allowed by the payment of corresponding price differentials, fixed by a committee of the Exchange twice annually, in the months of September and November.

Settlements of trades may be made individually, or by groups of members, or through a clearing system, the agency of which is a designated bank near the Exchange. No record is kept of the transactions, but it is probable that for a series of years the sales have averaged fully 50,000,000 bales annually.

INORDINATE SPECULATION.

There have been in the past, instances of excessive and unreasonable speculation upon the Cotton Exchange, notably the Sully speculation of 1904. We believe that there is also a great deal of speculation of the gambling type mentioned in the introduction to this report. In our opinion, the Cotton Exchange should take measures to restrain and, so far as possible, prevent these practices, by disciplining members who engage in them. The officers of the Exchange must in many cases be aware of these practices, and could, in our opinion, do much to discourage them.

Respectfully submitted,

Horace White, Chairman,
Charles A. Schieren,
David Leventritt,
Clark Williams,
John B. Clark,
Willard V. King,
Samuel H. Ordway,
Edward D. Page,
Charles Sprague Smith,
Maurice L. Muhleman, Secretary.

The manufacture of hosiery and knit goods has within recent years attained to very large proportions in the United States, giving employment to 103,715 wage-earners in 1905, of whom 66.4 per cent. were women and 9.3 per cent. children and young persons under 16 years of age. The number of knitting machines increased from 69,047 in 1900 to 88,374 in 1905.

Seasonable Fabrics.

DRESS GOODS.

The demand for all grades of fall dress goods has surpassed the estimates made by the manufactures earlier in the season, by many thousands of pieces. The demand has not been on any particular grade, but has extended to all dress fabrics. French serges and panamas are favored with broadcloths in their usual demand. Several importers report that they cannot supply the demand for storm serges, especially in navy and black. Most of these importers as well as the domestic manufacturers are weeks behind in delivery.

The market is short many pieces of cream dress goods, especially in low panamas and serges. Several manufacturers making low end cream serge and panama have sold up their entire fall production.

As predicted earlier in the season, the demand for shepherd checks has increased to such an extent that the supply is short many pieces.

Striped dress goods, both hair line and pieced dye effects, are finding a ready market. Fig. 1 shows a 54 inch wide wale stripe from B. Priestly & Co. at $1.00 a yard.

Hard twisted voiles costing from 62 1/2 to 85 cents a yard continue to be in demand, especially with the cutting up trade.

SILKS.

As the season progresses the demand for fall silks continues to improve, especially on the fabrics that have shown such popularity during the past few weeks. With all early shipments completed, the manufacturers are receiving a great many reorders for the leading shades of wisteria, mulberry, old rose, reseda and myrtle. They feel confident that the fall season will finish very strong and are advising the trade to supply their wants in advance, as deliveries will be slow later on.

The demand for rough pongees in medium priced fabrics costing from 45 to 67 1/2 cents a yard continues to be one of the features of the silk market. Pongees are being used in large quantities by both the cutting up and retail trade. Tan is one of the most favored shades.

The demand for moire silks has shown such activity during the last few weeks that the market is short in supply many thousand pieces. In former seasons black moires have been in demand, but this season the trade is calling for these goods in full color assortments. The most popular lines are 36

FIG. 1.

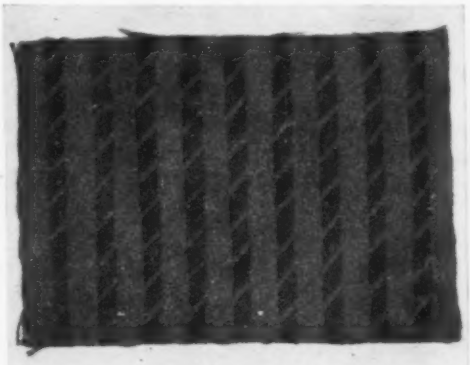
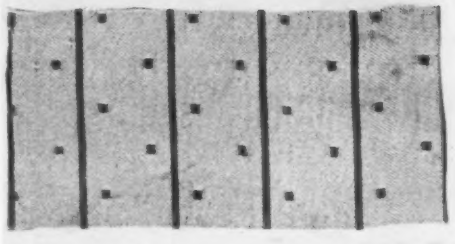


FIG. 2.



inches wide, costing from 70 cents to $1.00 a yard.

Satins and satin faced goods continue to find a ready market. While the demand on these goods is not as large as last season, the manufacturers are well satisfied with the orders they are receiving and predict a big spring trade on all satin faced messalines. In fact all plain silks will be in demand for spring, as the coming season points very strongly towards a plain season.

While no marked advances have been

made on black taffetas this season, buyers continue to request these goods in small quantities, with no apparent demand as in former seasons.

The demand for fancy silks for the fall season is not as brisk as usual. Stripes continue to predominate, with checks gaining favor as the season progresses. Fig. 2 shows a jacquard stripe, 24 inches wide, from Arnold Constable & Co. at 62 1/2 cents a yard. Fig. 3 shows an 18-inch stripe

FIG. 3.

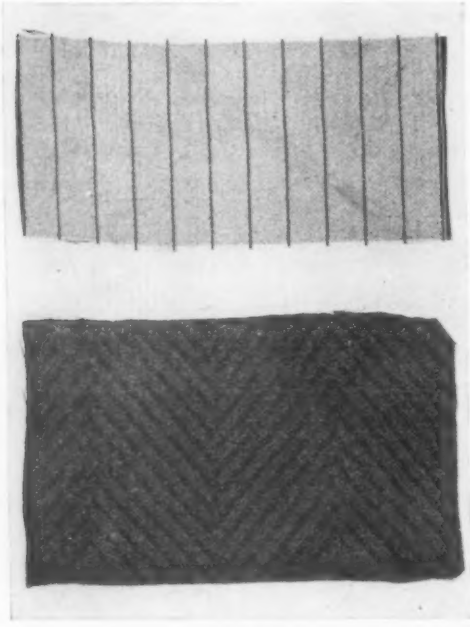


FIG. 4.

messaline at 43 1/2 cents a yard, from Samuel Eiseman & Co. Fig. 4 shows a 19 herringbone stripe from Givernaud Bros. at 40 cents a yard.

The manufacturers catering to the larger trade have booked some very large orders for foulards for spring delivery. These goods consist of a very neat range of designs and colorings. Well covered patterns are favored with the usual assortment of staples. Foulards will hold a strong position in the market during the coming season.

COTTONS.

The cotton goods market continues active. While advances of 10 to 15 per cent. have been made on all grades of cotton piece goods, the trade in general feel that prices will continue to go higher in the near future. The more conservative buyers are supplying their spring wants at today's prices. A number of the smaller mills that were short on grey goods during the early season are compelled to curtail their production. A number of mills making grey goods have closed their plants, as they could not operate on raw cotton at today's prices.

The manufacturers of sheetings and 4/4 cottons predict that staples will reach the prices of two years ago when 10/4 bleached sheetings were sold for 35 cents a yard and 4/4 Fruit of the Loom was sold for 11 cents a yard. On the other hand the buying trade feel that merchandise of this character is too high even at today's prices and that advances will mean loss of confidence in the market.

The advance order trade on dress ginghams has been one of the features of the market. A number of the mills making the popular brands have sold their entire production for the spring season. These lines are offered at the same prices as last year.

Staple ginghams and prints hold a very firm position in the market. The mills are holding these ginghams at value, and will not take future orders except on this basis. Prompt shipments are being made.

The demand for all spring wash goods has been very active, with very slight advances over last year. The manufacturers look forward to a banner spring wash goods season. Plain colored fabrics are being favored and indications point to a big plain season in suiting effects, especially imitation linen weaves. Fancy wash goods such as printed batiste, lawns and madras are in demand for the early spring season. These cloths are favored in colored grounds in the various styles.

The converters report that the general demand for linings has increased during the fall season, and from the present outlook it is evident that the spring trade on linings,

especially cotton moires, will be brisk in all of the leading shades.

A great many orders for spring white goods are being taken this season. From the number of orders taken it is evident that the coming season will far surpass last year. Plain white goods such as India linons, nainsooks and Persian lawns are finding a ready market. The demand for mercerized jacquard fancy white goods has been one of the features of the market. The trade is calling for these in qualities costing from 10 to 22 1/2 cents a yard.

RECOGNITION FOR SENATOR PENROSE.

The work of Senator Penrose of Pennsylvania during the recent revision of the tariff was recognized by the Kensington textile manufacturers in a novel and striking manner last month. On "Penrose Day" the Senator made a tour of the manufacturing district and at each mill found the employes assembled to receive him. The first stop was at the mills of Ivins, Dietz & Metzger, where the Senator made an address to a large number of employes, saying in part:

I am very glad to be here and see the great development of what was a comparatively small place in 1873, when you began with a hand loom. These beautiful fabrics show the advancement of American ingenuity and tell what you can do under a Protective Tariff. Your employers could take this plant to Germany and make good money on their investment, because of the low wages paid for foreign labor. But the tariff makes up for the difference between wages paid there and in this country.

When this firm started in business they sent a representative to Persia, who found that weavers there were getting five cents a day for 13-hour days. What American laborer could stand up under such competition and maintain the standard of his home? It only shows that the tariff must be a permanent fixture of our national policy.

Visits were also made to the Brown & Aberle Mills, the Collingwood Mills, Stead, Miller & Co.'s tapestry mills, and Thos. Wolstenholme & Co.'s plant.

In the evening a banquet was given to the Senator at the Bellevue-Stratford. Joseph R. Grundy, of Wm. H. Grundy & Co., Bristol, Pa., presided and in his opening remarks said:

About a year ago a trade association within our city gathered together a number of the leading spirits in the textile work of our city for the purpose of discussing the questions arising out of the revision of the tariff. At that time the question as to what kind of a tariff revision we were to have was very much discussed and great uncertainty prevailed. At that board also sat our guest of this evening. He was a candidate for election, and under the circumstances of this unrest and uncertainty to which I refer. When he addressed the assemblage that night he said to those practical business men there assembled that if he was re-elected to the Senate of the United States and was privileged to participate in the revision of the tariff then contemplated there would be no stone unturned, there would be no energy that he would not expend, to see that the industries of Pennsylvania, that the labor of Pennsylvania, received from the hands of Congress that recognition which was just and necessary for their preservation and successful prosecution on reasonable lines. How well he has kept the pledge I propose to leave to more talented orators here this evening to tell; but this I want to say, in presenting your guest of this evening, that if those of you who are interested in the great industries of our commonwealth and of the nation will show the same energy and earnestness in preserving what he has so successfully won for you, the industrial future of Pennsylvania and the Union will be secure.

In responding Senator Penrose said in part:

The country is entering upon another period of great and extraordinary prosperity. It began on the morning following the Presidential election of 1908, just as it did on the day following the election of Mr. McKinley in 1896. The assurance of an intelligent readjustment of the tariff along protective lines and the establishment of the gold standard in 1896, and in 1908 a similar assurance as to the tariff and that the monetary question will be dealt with in the future along sound and conservative lines was sufficient to cause a revival in every branch of industry.

The condition of manufacturing industries may be determined with considerable accuracy by the statistics of importations of raw materials. Raw silk, india rubber, hemp, jute, cotton, wool, chemicals, pig tin and many other articles required in our great manufacturing industries must come wholly or in part from abroad. The value of manufacturers' materials imported since Nov. 1, 1906, has been 547 million dollars, as against 371 millions in the corresponding month of the preceding year, an increase of practically 50 per cent.

The importation of manufacturers' materials since the assurance given by the Presidential election in November, 1908, has averaged over 60 million dollars per month, against a little more than 40 millions per month in the corresponding period preceding that election. The value of these materials drawn from other parts of the world and carried into the factories of this country on every day since the election of 1908 has been more than one-half a million dollars in excess of that in the corresponding days pending the uncertainty of the election, which should determine the continuation or termination of the protective system in the United States.

When we consider that the raw material brought from abroad forms but about one-tenth of the raw material used by our factories, the remainder being drawn from our own mines, forests and farms, we begin to realize the importance of this improved condition and of its full significance to the five and one-half million wage-earners in the manufacturing industries of the country receiving more than two and one-half billion dollars per annum for their services.

The country owes a debt of gratitude to President Taft for his stalwart stand in favor of the protective principle as embodied in the Payne bill set forth in his speech at Winona. Around his position the forces will rally. Publicity, education, organization and constant and unremitting effort are necessary until the American people become finally convinced throughout the length and breadth of the land as to the nature of the protective proposition. It is often as difficult to maintain a position as to gain it.

In the long run no one can establish any political proposition or secure or maintain any legislation or be certain of even protection and consideration without effort and exertion, and much more is this statement true under Republican institutions. Let us remember past perils. Let us realize the contests that are to come and let us resolve to be ever in a state of preparation. Nations today survive by industrial supremacy. Growing competition in Europe, where the very existence of great nations depends on finding a foreign market for half of their manufactured products, makes the protective policy almost essential to the American people if we are to preserve our home market for ourselves.

The threatened competition from the awakening Oriental people, with their industrial millions working for wages on the lowest scale, make the protective system no longer a temporary expedient for the establishment of industries, as taught by Mill and the old writers on political economy, but as fixed a part of our national policy as the Monroe doctrine. Whatever forms of civilization the centuries may have in store, this age is industrial, and in it we have circled the globe and advanced civilization to its highest recorded point. If the result of this gathering should be to awaken in the breast of everyone a greater realization of these facts than has always existed in the past and should excite a keener determination vigilantly to foster and uphold these principles, then this occasion would indeed be fruitful of many good results.

Speeches were also made by Mayor John E. Reyburn of Philadelphia, Governor Stuart of Pennsylvania, Theodore Justice, John Stewart, who represented the labor organizations, J. A. Farrell, United States Steel Co., ex-Secretary of the Treasury Leslie M. Shaw, Frank L. Chipman, who represented the hosiery industry, and Congressman J. Hampton Moore.

COTTON GROWING UNDER DIFFICULTIES.

BY ARTHUR KUFFLER, at the Milan Cotton Congress.

The work of the German Levantine Company in Asia Minor is on quite different lines from that of the other countries which have been referred to. We formed a company, and worked it on business lines with the object of making a dividend for the shareholders. First we had a capital of $60,000. Afterwards the amount was raised to about $125,000. A powerful compress was purchased in Egypt, and the Egyptian way of compressing the cotton was adopted with great success. The result was a great saving in railway and ocean freight. I do not think the results have been bad. From 1904-5, when we started, to 1907-8 the Asia Minor crop exported has increased by 50,000 bales, as the result of the work of this one company, and that despite the difficulties that stand in the way. One of the difficulties is the rigid beliefs of the Turkish farmer. I heard that when the Turkish farmers were first offered cheap American seed, and were told, "You will get more cotton from that than from your own seed," they replied, "What stupid fellows you are. If Allah wishes, it will grow more; if Allah does not wish, it will not grow more." That prejudice has to be overcome, and by degrees it will be overcome.

Now I come to the saddest part of our experience. Only two weeks ago what are called Armenian atrocities took place right in the center of our work. About 20,000 people, men, women, and children, have been killed in the town and neighborhood, nearly the whole of the town has been burned, and we do not know what the losses will be to the company. We do know that the offices have been burned, and that everything valuable has been taken. I am glad to say that our officials, our pioneers, have been saved, along with their families. One thing I have been specially requested to say: that we are all very grateful to the Eng-

lish consul of the district, who, exposing his own life, did his best to help the Europeans regardless of nationality.

You know how companies are run in these countries. You have to advance money to the farmers, who, in return, bring you the cotton. Well, we do not know how many of these farmers have been killed. We hope that after these fearful times quieter will come. We will not give up. Having gone there we will stay, but we cannot expect to give you a successful report next year.

CARDED WOOLEN AND WORSTED IN ENGLAND.

BY ROMULUS.

The census of production that has been newly instituted in Great Britain will in future greatly aid those like myself who seek to compare the progress in England of the carded woolen industry with that of the worsted branch. The one census of production that has been taken rests unpublished and even were it available would shed no light upon the past. Perforce one has to be content with a less orderly array of figures taken from separate sources and this I present with some running observations for as much as it may be worth in illumining American problems. The authorities relied on are the Factory Inspection returns and the Board of Trade statistics of external trade, neither of which is known to be infallibly exact. There is no reason, however, for supposing either to be more wrong in one year than another and such as they are these statistics are the final authority. That they are not more complete is to be regretted.

If a first glance is given at the number of people employed in the woolen and worsted industries jointly it will be found that there has been a diminution. The total was 262,283 in 1867, 301,556 in 1889 and 261,192 in 1907. It must not be deduced from this that the industries as a whole are going down, for the product is greater if the hands are fewer. The decline occurs in the employment of persons under 20 years of age, for, within 400, there were just as many adults employed in 1901 as in 1891. In the circumstances the test of employment is not a good one and the available figures do not carry far. Comparison between woolen (including shoddy) and worsted can only be made up to 1899:

Persons Employed.

	1867	1899
Worsted Factories	131,896	130,695
Woolen Factories	130,387	125,730

The statement shows the carded branch to be a loser, but before a point is made of that fact regard has to be paid to the great development of the export top and export worsted yarn trade, as to which more will be said later.

I append summaries showing the comparative numbers of spindles and looms:

	Spinning Spindles (millions)		Double Spindles (thousands)	
	Woolen and shoddy	Worsted	Woolen and Shoddy	Worsted
1874	3.27	2.18	159	400
1878	3.42	2.10	327	456
1885	3.14	2.23	233	536
1890	3.20	2.40	301	669
1904	2.68	2.94	214	845

	Looms (thousands)	
	Woolen and shoddy	Worsted
1874	58	82
1878	59	87
1885	60	80
1890	64	67
1904	51	53

Observe in the foregoing the contrary movements—carded spindles going down and worsted spindles going up, accompanied by the downward trend of looms in both industries. The figures point again to a worsted yarn industry existing as a separate entity and run not to feed British, but to supply principally German looms. It would be perfectly easy and perfectly misleading to attach percentage figures to these tables and to profess that the looms and the spindles to which they relate were all of equal capacity in production. Of course the fact was nothing of the kind. The woolen looms that have disappeared are the hand-looms and the slow ones and the worsted looms which figure no more in returns are the light, narrow and also the slow ones. The looms have been replaced by heavier,

broader and faster machines. The short and non-self-acting mules of forty years ago are palpably not comparable with the spinning machinery of this day and worsted frames at a moderate computation run one-third faster now than then.

Wars and tariffs as well as natural wear and tear, invention and fashion's changes will explain some of the movements appearing here. The German tariff of 1879, the French one of 1892 and the ever-famous McKinley bill had their part in destroying English looms even as the Franco-Prussian war had in creating them. Manufacturers have been changing plants all along; trade has been leaving one district and going to another. When they could not sell cloth abroad worsted men pushed the sale of yarn. The 2,924 worsted combs and the 2,937,900 worsted spinning spindles (1904) are out of ratio to the 52,725 worsted looms. They are grinding out the 36 million pounds or so of tops for export and the 70 million pounds or so of yarn. This export of half-finished material to which neither the American worsted nor the British carded woolen industry offers any parallel needs to be allowed for.

There are other items also which it is impossible to scrutinize minutely that tend to confuse exact comparison. The worsted spinner sells a quantity of warps for goods which would be described as woolens when they are manufactured. The woolen spinner provides some, although not very much, filling for worsted trouserings. The worsted dress goods maker complicates affairs further by weaving in large quantities of cotton and of silk.

Get we back then to the comparison in looms in case that offers a firm foundation. It is possible, for 1904, to classify the looms by widths:

Power Looms.

	Worsted	Woolen and Shoddy
Up to 40 in. reed	7,248	2,208
Over 40, under 60 in.	18,510	4,333
60 in. reed space and over	26,967	45,248
	52,725	51,789

The position is that the totals in each industry are approximately equal and that worsted claims only 37 per cent. of the broad looms run in the joint businesses. Half the worsted looms are for stuffs, linings or three-quarter cloths.

So much appears from statistics. Private judgment favors the opinion that there are more old and slow looms in the carded than in the worsted trade. Of the light looms enumerated some may be run on goods nearer the cotton than the worsted classification. But there the figures are just as they have been given to the Factory Inspector by manufacturers who should know whether they are worsted or woolen men.

The carded woolen branch is at any rate extensive. It had (1904) some 6,400 carding sets, mostly modern, and 895 rag pulling machines. I give Bradford Chamber of Commerce estimates of the consumption of rags to show that this department has not been dying away. If these are partly guesswork they are the best guesses of their kind:

Estimated Annual Consumption of Shoddy.

1865-69	60 million lbs.
1870-74	89 million lbs.
1875-79	104 million lbs.
1880-84	123 million lbs.
1885-89	101 million lbs.
1890-94	118 million lbs.
1895-99	132 million lbs.
1900-04	145 million lbs.
1907	210 million lbs.

Another view of the situation is found in British Export Returns for Fabrics:

	Thousands of £		
	Woolen	Worsted	Stuffs
Average 1890-94	5,509	4,392	4,199
" 1895-99	5,608	3,674	3,971
" 1900-04	5,994	2,827	3,530
" 1905-07	9,736	3,399	3,629

NOTE: "Woolen" covers all carded tissues, pure or mixed, other than flannels, blankets or carpets, which are left out of account. "Worsted" implies "coating," all-wool or union. "Stuffs" stand for lighter worsted goods, pure and mixed.

As affairs are going the export carded woolen trade is doubling in value. Stuffs and worsteds in export have last a lot of ground and woolen leads in value by approximately 40 per cent.

Having dealt long enough in figures to show the carded woolen manufacture to be a big thing in England, and co-extensive with worsted in importance, I pass to a brief review of the relations of the pair and of the influence of fashion. To an extent the two are inimical. Worsted has inflicted some injury on woolen, notably in black cloth. Screws and clays all but extinguished the old highly-finished superfines of which Sunday coats were made thirty years ago. On the other hand woolen keeps worsted prices continually in check and takes from worsted when wool rises. Each has a steady business that is more or less regular seasons and each gets an occasional advantage at the other's expense. Worsted and woolen seesaw fairly regularly in and out of favor. In some lines the force driving the seesaw is price. Take the very common case of the draper with customers who are not content if they cannot buy material for dress skirts at a shilling a yard. When crossbred is cheap enough he puts forward a hard worsted serge. When wool rises so that there are not worsteds good enough at his limit, he maintains his price of a shilling and sells a woolen serge. If wools continue to rise and shilling serges continue to grow poorer in quality the public is all the more ready for worsted again on its return to reasonable prices. The same process is followed by the wholesale clothier.

In some other lines the seesaw is driven by fashion. Huddersfield worsted men and Scotch woolen men fight desperately with patterns and alternately they hold first place. Worsted has its spell of favor until it occurs to persons in authority that worsteds are tame. Then comes a season like the present when everybody is wearing tweeds or worsted imitations of them. The styles are too faithfully copied by Yorkshire woolen makers at about half Scotch prices and worsteds come in again.

A precisely similar movement occurs in the trade in ladies' costumes. The spells of favor vary in duration, but the longer tweeds are in the longer are they out. A rough equilibrium is maintained.

Something more than a personal opinion bids one say that in England there is less prejudice against woolens as such than would seem to be the case in the United States. The free drift of favor from one to another has already been indicated. Another international difference demands mention. It is obvious to all observers that the development of the wholesale clothing trade in England has been of immense advantage to the carded woolen interest. No statistics tell what this development has been, but it is absolutely clear that ready-to-wear clothing is a much more formidable factor in the United States. Arguing from English example one would have supposed the growth of tailoring factories to have been better for woolen than worsted in America. I state the fact and leave it for consideration. In the same way I state that on the general admission of all the English worsted men who have looked thoroughly into the worsted and woolen trades, the latter is the more complex and difficult and demands the higher order of skill. In particular is this true of those branches of the carding trade which necessitate the employment of low materials. The especial form of skill that is most valuable to carded woolen mills in Yorkshire is that which teaches a man to make the most out of any and every kind of wool and waste, to remedy the defect of one material by blending in another and however markets may move, to bring in a serviceable and stylish enough cloth at a price.

This is said without disrespect to the undoubted attainments of American carders and without reference to the difficulties they may have in getting cheap supplies of diverse sorts of raw material. In some ways the carded industry in England is a pretty flourishing one, but without this peculiar ability nobody in Yorkshire can stay in business—much less succeed. The ability varies, but whether it adapts itself to making goods after a type of one's own out of the materials that the rest do not know how to use, or whether it is devoted to standard productions, the brains and experience are the sine qua non.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

SHIRTING NOVELTIES.

BY J W.

Figs. 1 to 4 show new and fashionable styles for first-class shirtings, or for ladies' cotton dress goods. The particulars for the four styles are: 32 dents per inch, 2 and 3 threads in 1 dent, 20s warp American ring yarn, 64 to 68 picks per inch, 16s weft for the filling. By changing the colors in each case, an effective range of designs may be brought out.

The full design drafting, and dobby plan are given in each case, Figs. 1A to 4A. The marks on designs are intended for white threads, and heavy squares for colored threads. The warping patterns read from left to right to come into the full designs. The matt weave is crammed in the reed.

FIG. 1.

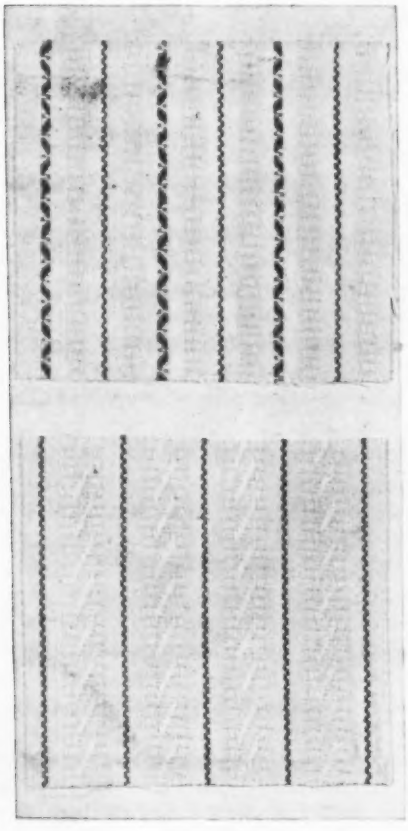


FIG. 2.

FIG. 3.

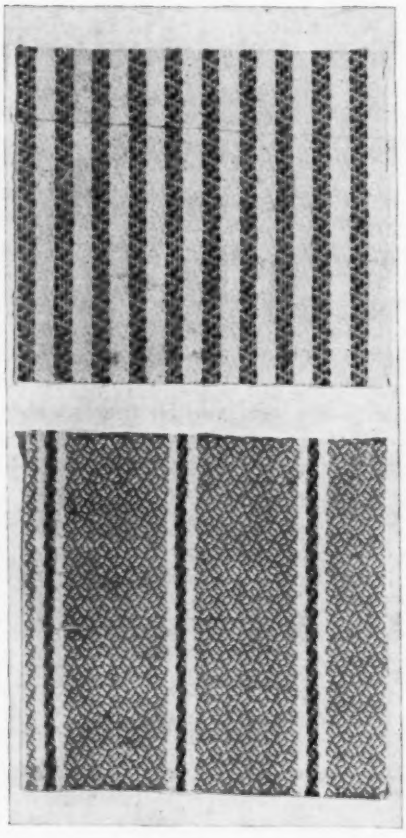


FIG. 4.

Warping plan and denting Fig. A:

8 threads, white = 4 dents
2 threads, navy = 1 dent

In some patterns all white is very effective.

Fig. 2: Warping and denting:

8 threads, white = 4 dents

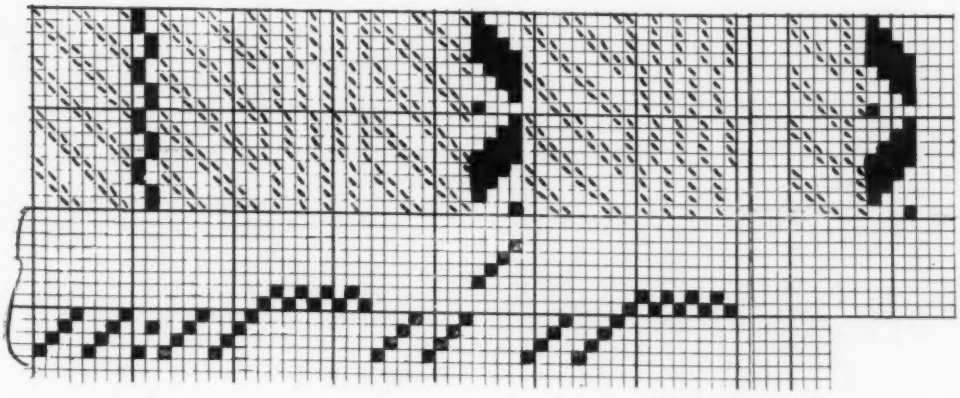


FIG. 1A.

8 threads, white = 4 dents
9 threads, white = 3 dents
8 threads, white = 4 dents
4 threads, navy = 2 dents
2 threads, navy = 1 dent
8 threads, white = 4 dents
6 threads, white = 2 dents
8 threads, white = 4 dents

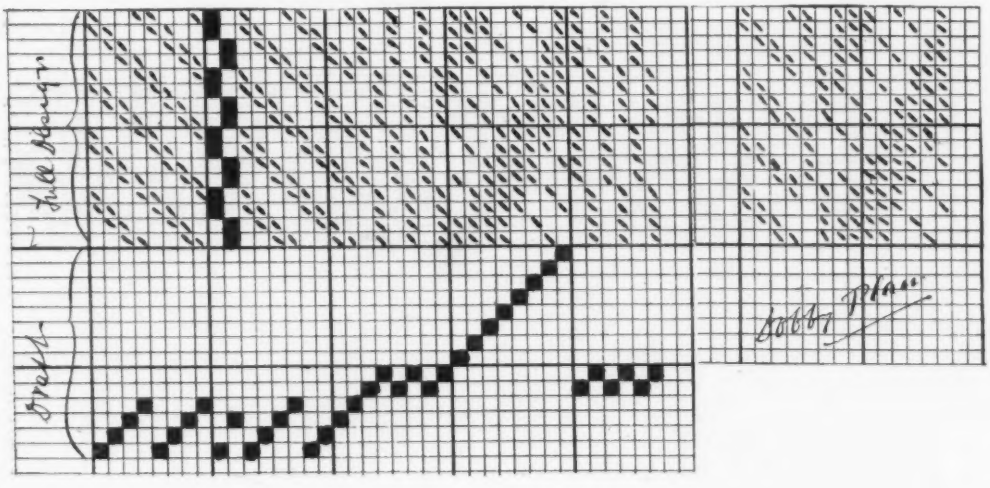


FIG 2A.

8 threads, white = 4 dents
9 threads, white = 3 dents
— —
56 threads

Colors: Black, green, dark heliotrope, brown, sky blue and dark pink are desirable.

6 threads, white = 2 dents
— —
38 threads

The matt weave only is crammed in this pattern. Colorings for fine stripe are similar to Fig. 1. This style is also made very effec-

tive by coloring the first 18 threads only in light sky, light pink, light helliotrope, French grey, light brown, etc.; thus the warping will be as follows:

18 threads light sky
20 threads white

38 threads per pattern

Full design, drafting, etc., as before.

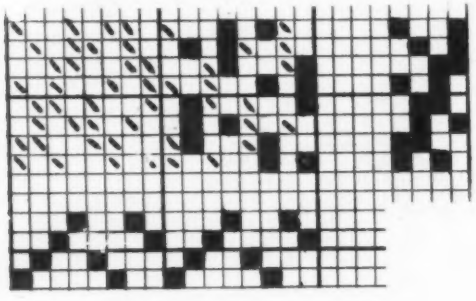


FIG. 3A.

Fig. 3: This is a very neat style and is becoming a favorite, especially in shirtings. Dark coloring must be used on white grounds for light patterns; and for dark patterns, navy, dark sky, brown, etc., for grounds, with white stripes. By using colored weft a great variety of choice designs can be produced. Fig. 3:

9 threads white
1 thread light brown
1 thread white
1 thread light brown
1 thread white
1 thread light brown
1 thread white
1 thread light brown

16 threads

Two threads in each dent. Only four harness is required to weave it as shown on the design.

Fig. 4 is also a style much in favor. The design can be woven on 4 harness, the drafting being the same as for Fig. 3. Two threads in each dent. Fig. 4:

4 threads white
4 threads navy (narrow stripe)
4 threads white
44 threads sky blue (pound)

56 threads per pattern

Desirable colorings are as follows:
Narrow Stripe:

Dark green
Dark pink
Dark heliotrope
Dark sky
Black
Black
Dark sky
Dark sky
Navy

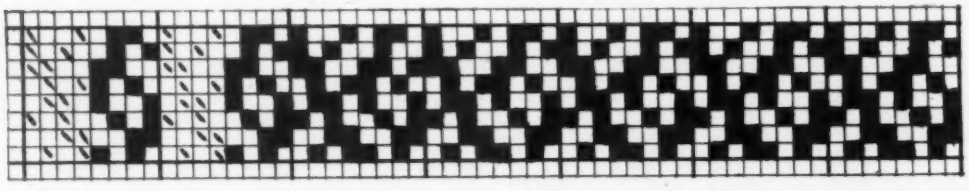


FIG. 4A.

Ground:

Light green
Light pink
Light heliotrope
Light sky
Black
Fawn
Cream
French grey
Light brown

If these colorings are carried out as above, with the addition of plain colors, and smaller designs, also white grounds with colored stripes, good results will follow.

CARD GRINDING.

(From the Grinding and Mounting of Card Clothing, recently published by Dronsfield Bros., Ltd., Oldham, England.)

THE BEST GRINDING MEDIUM.

In dealing with the subject of card grinding the first and the most important point to be considered is the grinding medium, or, in other words, the actual substance with which the grinding is to be accomplished. Many and various are the mediums which have been tried in order to arrive at the best results in the grinding of card clothing. Among the principal substances in use from time to time may be mentioned the following: Emery, corundum and carborundum; but, after long and careful experiment, emery has been established as the standard medium, and this for reasons which will be explained. All classes of emery, however, are not of equal utility for the purpose of grinding cards. Round or flat (shaly) grain is of little use. The best grain is of an angular or pyramidal form. If a grain of emery be magnified, say, 10/12 diameters, it will present to the eye a cellular formation; around these cells are very small needle-like points, and to these points may be attributed the whole of the ginding power possessed by emery, i. e., so far as its effect upon card clothing is concerned, and it is with this that we have to deal.

Other grinding materials do not possess this peculiarity, and as a result are not so well suited to the work. They may be excellent mediums for the grinding of plain surfaces, such as cast-iron or steel cylinders. tools, etc., but the peculiar treatment required in the grinding of the steel points of card clothing demands a medium of which emery only possesses the necessary qualifications.

As already stated, the whole of the grinding power attributable to emery is contained in the minute points projecting over the irregular surface of the grains. When these points and the extreme summits of the grain eruptions, as they may be termed, are worn away or broken off by contact with the card-wire, the emery is no longer doing good and useful work; it is simply polishing the points. There may be still a good deal of "life" in the emery so far as its nature as a grinding medium for general purposes is concerned, i. e., for mechanical purposes, but as an agent for card-grinding it is finished, and the sooner it is replaced the better.

The steel wire-points of card clothing require special treatment in order to leave, after grinding, the particular kind of point necessary for the carding operation. Emery is not, admittedly, the keenest grinding agent, and for certain classes of work would make a poor substitute for some materials now in general use in engineering and machine shops; but emery possesses the special features lacking in grinding agents, and is now in general use in the textile mills of the world.

THE GRINDING OF CARDS BY THE CARD MAKER.

Before dealing with the grinding of cards at the mill, it will be of interest to outline in brief the manner of grinding the cards by the card-maker, i. e., the initial grinding which the cards receive after they leave the setting machine.

The card fillet or sheet, as the case may be, emerges from the card setting machine with the points "in the rough" just as they have left the cutters. The surface of wire teeth has now to be ground perfectly true, and finished so that the teeth possess points of the correct shape; in the case of side-ground and plough ground card clothing, the sides of the teeth required to be operated upon in addition to the points.

The grinding of cards by the card maker is totally different from the grinding rendered necessary in the carding machine. This initial grinding is much more complicated, and we have introduced special machinery for use in the card clothing manufactories. The introduction of hardened and tempered steel wire, and the side and plough grinding of card clothing, have both helped to revolutionize the methods of card grinding, and we shall here illustrate and describe briefly the modern methods adopted in this branch of manufacture, being of opinion that a knowledge, however superficial, of the treat-

ment of card clothing before its arrival at the mill will help the carder in his treatment of the clothing under working conditions.

Many managers and carders have never been through a card works, and, if they have, it is possible that they may not have seen the various processes of grinding, and to these and cotton-spinning students in general a little insight will be appreciated.

THE VARIOUS TYPES OF CARD CLOTHING.

For all practical purposes, card clothing is divided into three different forms: (1) Fillets, (2) Flats (or Tops), (3) Sheets.

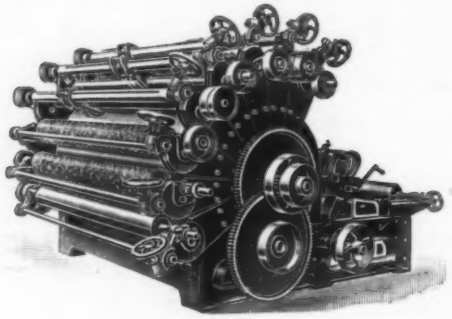


FIG. 1.

Fillets are now generally used for clothing cylinders and doffers, rollers and clearers, and in addition the subsidiary appliances of the carding machine, stripping and burnishing rollers. Among other uses to which card filleting is applied is the covering of raising rollers used in the machines for napping woven cloth, such as flannelettes, woolen and cotton blankets, shawls, etc., also the card covered rollers of brushing and cropping machines.

Flats, or, as they are termed in the trade, tops, are used for covering the iron flats of revolving flat cards, the wooden flats of Wellman stationary flat cards, and of composite cards.

Sheets are now seldom used in the cotton trade, but still play a good part in the clothing of woolen cards. Waste cards and cards for carding low grade cotton are frequently covered with sheets, as the spaces between the sheets on the cylinder assist greatly in the clearance of the superabundance of broken seed, leaf and dirt, which, in the case of a fully covered filleted cylinder, would be very difficult to get rid of without damaging to a great extent the wires of the card clothing.

With these three types of card clothing, then, we have to deal; let us take the fillet first.

THE GRINDING OF CARD FILLETS.

Card filleting is made in widths varying from 1 inch to 2 1/2 inches wide, according to the use to which it is intended to be put, and to the same end is ground in various ways, viz: Surface ground (only), surface and side ground, or surface and plough ground. The surface ground filleting may be of any of the following shapes: round, double-convex, or triangular. The side and plough ground wire is always round in its initial stage, i. e., after the setting process.

With the pro and con of the various shapes of wire we have nothing to do, and do not venture an opinion. The fact remains that much the greater part of the card filleting in use at the present day is round wire with the sides ground to shape, either by side grinding or plough grinding, or not ground at all save on the points. The surface grinding of all types of card clothing is identically the same in all cases. There is, however, an appreciable difference between side and plough ground wire, both are in reality side ground, but under different conditions.

Fig. 1 illustrates the Dronsfield patent card grinding and dressing machine, upon which card fillets are side gound, surface ground, burnished and dressed. This machine, in varying forms, is the card maker's principal machine for general purposes, as, in addition to fillets, it is adapted for grinding flats and sheets of every description. It is provided with the card mounting machine, flat and sheet stretching apparatus, traversing emery wheel grinders and long grinding rollers for surface grinding, emery wheel grinders for side grinding, and burnishing roller for polishing the teeth and taking off the barbs caused by grinding.

The card filleting is wound on the cylinder by the aid of the card mounter, and when thus wound and held by the special ratchet attachment, it has the appearance of a carding cylinder in working position. Arranged on the arches (representing, to continue the simile, the bends of a carding engine) are the various grinders, etc., above mentioned.

The surface grinding is accomplished by grinders covered with patent emery fillet, the long rollers assisting to take off quickly the rough and uneven points resulting from the "clipping" operation in the card setting machine, and the emery wheel grinders establishing perfect points and parallelism of the surface of points.

The "side" grinding operation is performed by the traversing grinders, in which the usual emery fillet covered disc is replaced by a traversing boss fitted with thin, bevel-edged, emery rings, held apart by india rubber packings, Fig. 2. These rings are composed of fine consolidated emery, and possess a long tapering bevel which attains a fine edge on its outer periphery. The rings are set to enter the teeth of the filleting, and in course of work are set gradually deeper until a depth is attained almost up to the bend of the wire.

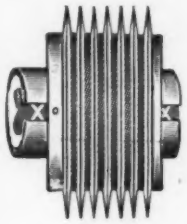


FIG. 2.

"Side" ground card clothing is frequently termed "needle-pointed," but this is, without doubt, a misnomer. The term is evidently applied to convey to the mind extreme sharpness. Card clothing with absolute "needle-points" would not serve the purpose for which it is intended, that is, to take hold of the fibers and carry them forward against the opposing teeth in order to straighten them and lay them parallel. If needle-points were actually used, they would last only a very short space of time before it would be found necessary to regrind the surface of wire points, and by this grinding the needle-point would be lost at the first onset.

There are two main reasons for "side" grinding, including "plough" grinding. Firstly, on account of round wire being used in the setting of the card clothing, it is possible to obtain a firmer grip of the wires in the foundation, thus giving greater resilience; also, by grinding away a portion of the sides above the bend a greater amount of clearance is permissible for the passage of the cotton without reducing the number of points; this extra space also militates against the retention of motes, neps, broken seeds, etc. Secondly, it will be understood that the grinding action of emery upon card clothing is not calculated to produce a polished surface, nor is it desirable if it were possible. A card wire point, if magnified, would reveal a series of minute corrugations, with fine points of metal standing clear of the body of the wire; these points are the fiber-carriers, and when worn smooth they must be replaced by regrinding. A perfectly smooth wire would be next to useless. Nor must the points be hooked, nor yet too pronounced; if so, they would have a tendency to take too firm a hold of the delicate fibers and break them, or, at any rate, strip them of that waxy coating which forms so great a feature. Lusterless yarn is frequently the outcome of this defect in carding.

FIG. 3

FIG. 4.

The shaping, then, of the card teeth by "side" grinding leaves an oblong point with rounded ends, Fig. 3, but the "surface" grinders operate upon this from back to front of the tooth, that is to say, from bend to point, causing it to be exceedingly sharp at the extreme point, Fig. 4.

(To be continued.)

THE BRADFORD AND FRENCH SYSTEMS OF WORSTED SPINNIG.

By *JOHN BROWN*

(Continued from October.)

A 16-spindle finisher or reducer is shown at Fig. 11. Two of these boxes are required to deal with the output of the previous box. dram sliver. As the sliver is now becoming much smaller in diameter 11 to 12 turns of twist per foot is required.

Three 34-spindle dandy reducers, to Fig. 11, are required to follow the finishers. A draft of 7 1/2 gives a 7 dram sliver, with a twist of 20 to 21 turns per foot.

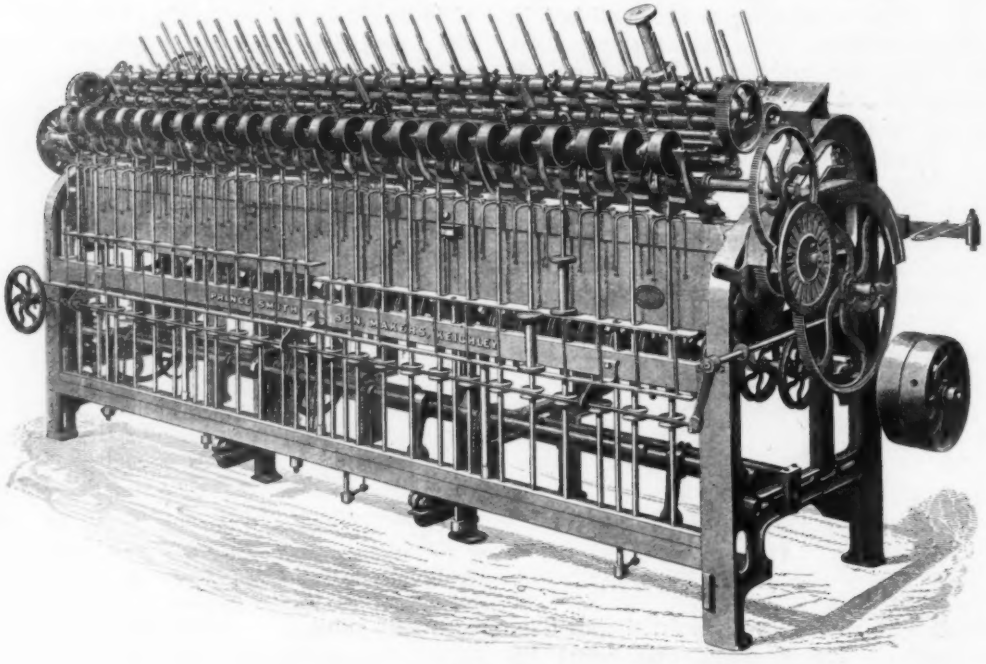


FIG. 12.

It will be noted that in these boxes the lifter is divided into 2 parts, one rising as the other is lowered, thus counterbalancing, and making an easier drive. Three bobbins are put

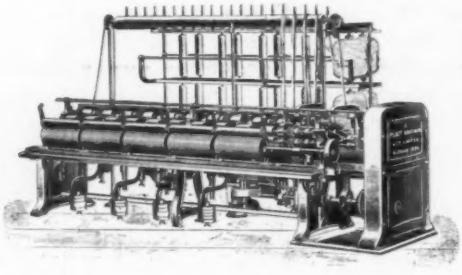


FIG. 15.

up at the back for each spindle in front. This with a draft of 7 1/2 gives a 17 1/2

A dandy rover is shown at Fig. 12. Twenty 24, or ten 48 spindle boxes, are required in this process, with 2 bobbins in the

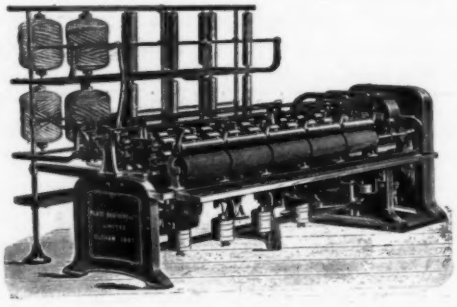


FIG. 16.

creel for each end. From these two 7 dram ends a 2 dram roving is obtained. A twist

of about 48 turns per foot will be ample for all ordinary work.

ning spindles will be required to deal with the output, 2,800 pounds, the following for-

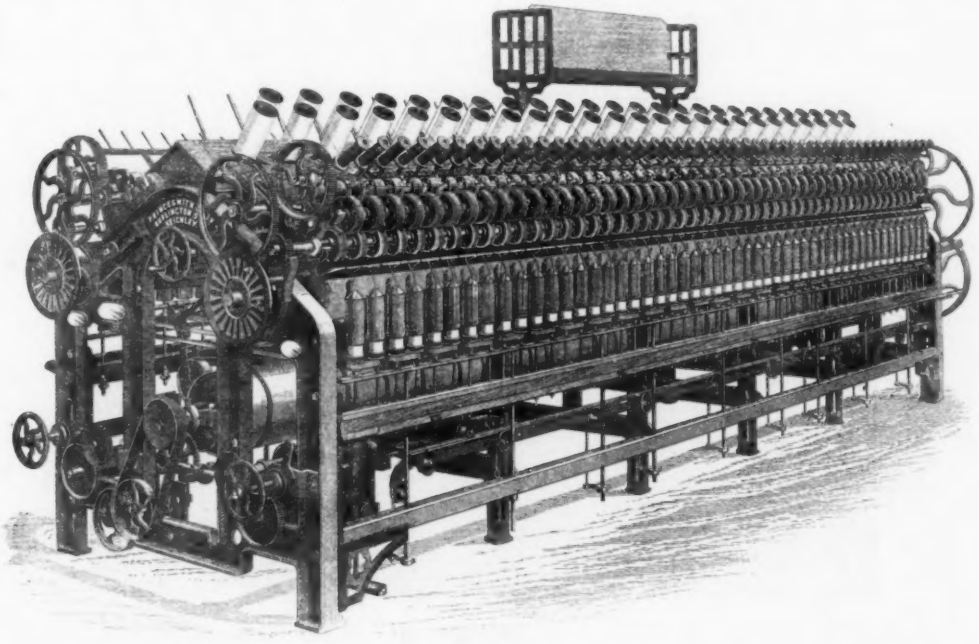


FIG. 13.

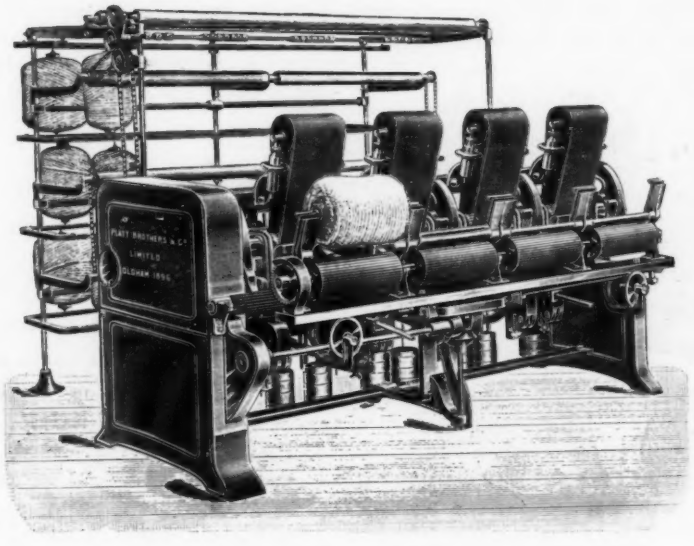


FIG. 14.

This operation finishes the drawing proper and in order to find what number of spin-

mula by J. E. L. Talham, will be found useful: 1. Find the speed at which the front

rollers run in the spinning frame, Fig. 13. Cap frames are mostly used for this quality. The speed is usually about 35 revolutions per minute with the rollers 3 inches in diameter or 9.42 in circumference. The circumference multiplied by the speed (35) gives an output of 329 inches per minute. 329 × 60 (min.) × 50 (hours) = 27,475 yards, or 49 hanks per week. This divided by the counts to be spun, 60s single, gives .81 pound per spindle per week. To spin 2,800 pounds per week 3,490 spindles will be required. In practice 18 frames of 188 spindles will be found sufficient. One end only is fed for each spindle. This with a draft of 6 to 1 will produce a yarn measuring 60 yards to 12 1/2 grains, the size required. The twist varies from 6 to 12 per inch, as required.

The number of drawing processes, amount of draft, twist and number of doublings vary in different mills, but the foregoing is a fair average setting for 60s.

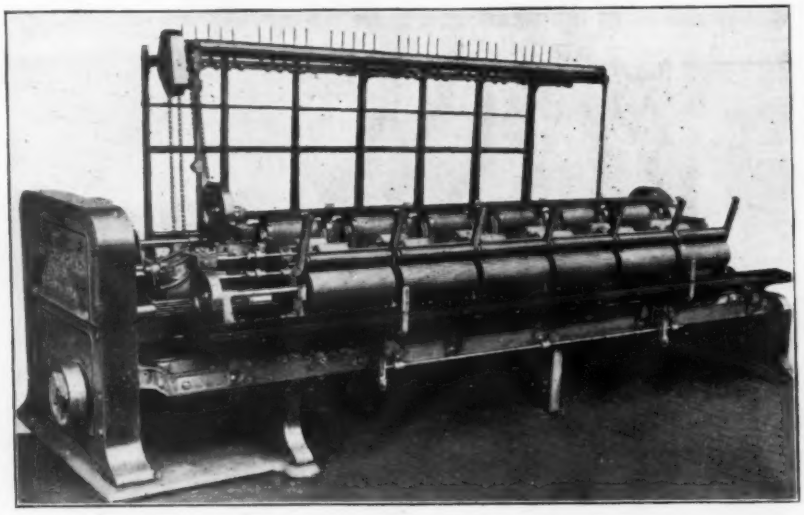


FIG. 15A.

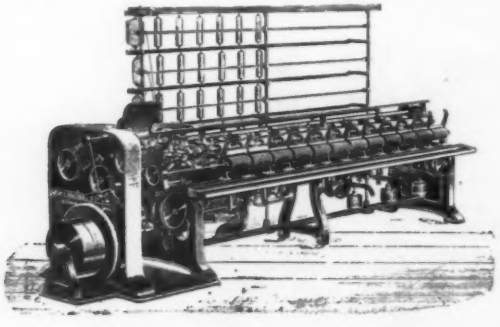


FIG. 17.

As a variation the following may be useful for a 60s made from shorter staple:

No. of boxes		Description	Draft
2		Can gills	5
2	2	spindle gills	5
1	4	" "	5½
1	6	" "	5¼
1	8	" "	5¼
2	8	" " finisher	5¼
2	24	" slubbing	6
3	32	" roving	6
9	32	dandy roving	6
18	180	spinning cap frames	6

FRENCH SYSTEM.

This set is worked out for 5,400 pounds of 5 dram roving in 50 net hours, spun to 43s, that is, 43 yards weighing 12 1/2 grains. In French drawing smaller rollers are used all the way through, after the wool has left the gills, while in open Bradford drawing 4 inch rollers are used until the finishers are reached, the latter having 3 inch rollers. The spinning frame has rollers of the same

diameter. Much smaller rollers and less pressure are used in the French system. them from being broken while the reducing process is being carried on. In all calcula-

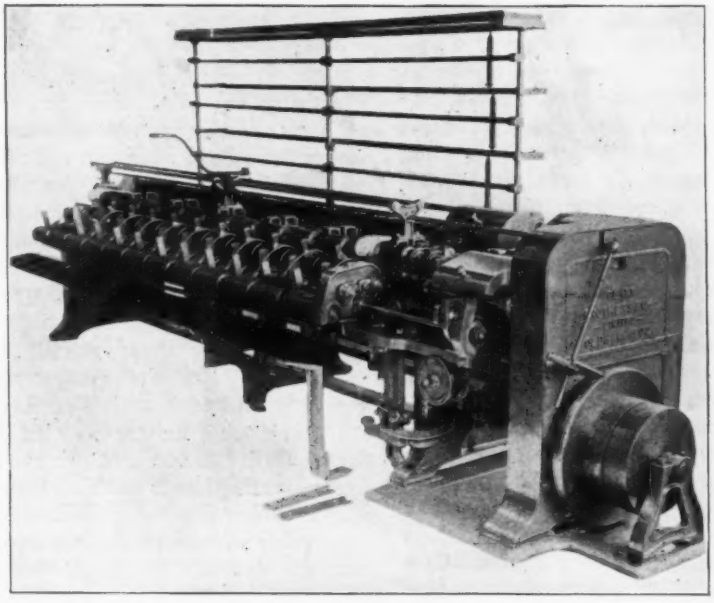


FIG. 17A.

Owing to the open state of the slivers and freedom from any twist this presents no difficulty. Added to this the action of the tions the porcupine must have a slight lead over the back roller, just sufficient to lay the fibers well into the pins, but not so much as

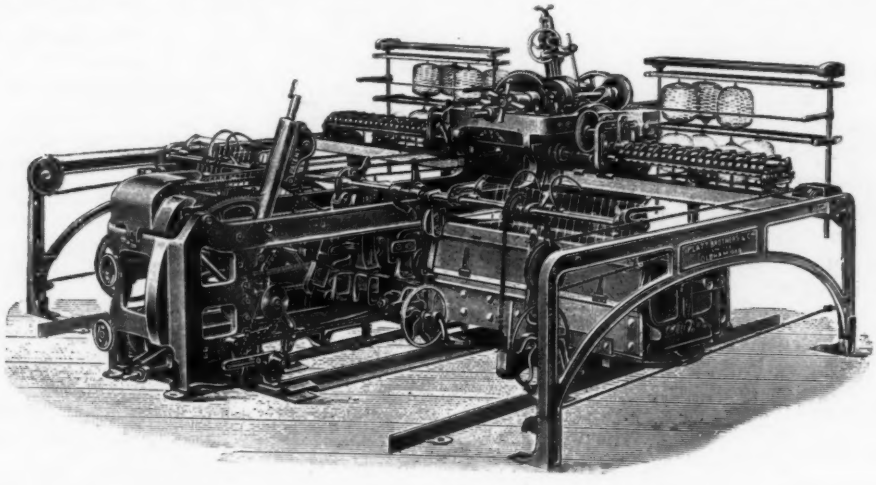


FIG. 18.

porcupine in separating the fibers not only makes an easy draw, but prevents any of to push the ends of the shorter fibers as the back roller releases them.

(To be continued.)

ENGLISH NOTES.

(By Our Special Correspondent.)

High prices are the fly in the ointment. Twice in four weeks have Horrockses Crewdson's, the largest makers of staple cottons for the home trade, had to revise their list. Dear wool and waste are troubling our carded woolen people more than a little. Work is plentiful among them and many mills are making overtime. Worsted is busy in all departments and if ever there were no doubt that merino would go no higher and that buying of goods would go unchecked at present rates everybody would be happy. Linen manufacturers are still in clover and are kept so busy weaving old designs that they are not at present putting in many new ones.

Textile business with the United States up to the end of September has been particularly good. Increased exports from Bradford, Manchester and Huddersfield still meet the eye. The item of stuff linings alone exceeds $125,000 in the month. Cotton lining exports, in answer to the new tariff, commence to drop off. Machinery—chiefly worsted, to judge from its source—forms an item of $800,000 in September returns.

* * *

The short time movement in the cotton trade continues to be a source of anxiety for all concerned. Until November 4th, at least, hours will be 40 per week. The operatives are depleting their collective resources and their employers find conditions rather worse than better as time passes. The raw cotton market may yet provide some relief, but as affairs stand in early October it is all too easy to lose 2 cents a pound in converting cotton into yarn. And only in the best times and for short periods together do spinners make as much as that.

Grievances make themselves audible in the depression and in particular sellers are aggrieved by the prevalence of short-reeled yarn in the Levant markets. Italians are the sinners and pressure is being brought on the Turkish Government to establish honest, standard measure. A smaller matter is that some of the Belgian mills are dumping in this country long-reeled yarn, weighing 10 1/4 pounds to the 10-pound bundle and conveying extra length as well as extra weight.

* * *

Arising out of the continued curtailment of yarn production some American comments have been heard on the vast, blundering addition made of late years to the number of Lancashire cotton spindles. There seems to be some misunderstanding of the causes leading to the folly. Certain of the new mills were built out of the profits of existing concerns and had there been no others probably there would now be less grumbling. But the company promoters got to work and Manchester Exchange talk says they took in one way or another an average of $50,000 out of each flotation. Certainly they built mills costing $7.50 per spindle which now have the awkward task of competing with mills written down to $1.25 per spindle. As to their mode of filling their own pockets, one may quote the experience of an engineer. He was instructed to quote for the supply of an engine. He was to go into close detail, ascertain the best that he could do and then to add $5,000, which sum was to be paid in cash to the chairman of the company. So far from being exceptional, the instance is thoroughly typical of the work that went on in the heyday of the millbuilding boom.

* * *

Silence has fallen on the promoters of the ring spinners' combine. The proposal has not definitely fallen through, but it is easy to find spinners who predict (a) that the association will never be formed and (b) that its life will be a short one should ever the scheme come into being. The scheme is usually dismissed with: "They have tried that sort of thing over and over in the cotton trade. All other attempts have failed."

* * *

Indignation is expressed over the new requirement of the American Government in respect of nets, flounces, galloons, edgings,

etc., imported. The exporter is to declare on his invoice the name of the machine employed in the manufacture. Already some say that they will not do this and their attitude is encouraged by the press. Men skilled in the Nottingham trade say that it is easy to tell the type of machine used for curtains by simply counting the threads. The requirement apparently aims at the more complex furbelows and it is read in conjunction with the item free listing lace machinery for the next two years.

* * *

After ten years' establishment the 41 1/2 million dollar combine known as the Calico Printers' Association is still being reorganized. The company had, to begin with, 830 printing machines, so that the capitalization, roughly, was $50,000 per machine. The amount included numerous premises and various accessory plants for spinning, weaving, hemming, warehousing, etc., and on today's revaluation these assets are worth £23 1/2 millions exclusive of copper rollers, stock and stores. The entire selling arrangements are being recasted, the weaving is being standardized, new power plants have been put in, the closed works account has been written down to skeleton value and it is hoped that a steady era is now opening before the concern. The hand of Otto Philippi, the master genius of J. & P. Coats, Ltd., and of the whole sewing cotton trade, is to be seen in the rearrangements. Calico Printers' stock stands at 45 per cent. of face value for the $10 million of ordinary, 85 per cent. for the cumulative preference fives and 92 for the perpetual first debenture fours. In recent trading the Association has not fared so well as its largest competitor, F. Steiner & Co., Ltd., a compact concern of $4 1/2 millions capital with a smooth record of excellent connections.

* * *

More fortunate than the American sheep owner, the English farmer can rely on police assistance in tracing and destroying sheep killing dogs. A Cheshire farmer who lost nineteen head in a night traced the dog and killed it and got the police to find its owner. He recovered $140 damages, which fact is likely to be remembered in his district for some little time and to induce a wholesome caution.

The sheep killing dog is on the whole less of a nuisance to the interurban farmer than the merely mischievous animal that chases flocks through fences and into clover and turnips and corn. The law does not deal with the case severely and rather than erect sheep proof fencing the farmer stocks no sheep.

Perhaps the matter will have no practical effect on next year's supplies of Scotch carpet wool, but buyers may note that growers of it have had a most discouraging season. Lambs have been sold at disastrously low prices—nearly 40 per cent. less than last year—but it is scarcely the case that on the mountain pastures any stock except sheep can be run.

* * *

The spinning manager of a merino worsted mill which has been at large costs in mending its fabrics gave some reasons which occur under his observation. A "young boss," i. e., a too enterprising son of the manufacturer, is accountable for some of them. He wanted the combing and drawing processes to be speeded up. Pins were knocked out of the fallers and wheels were changed to please him. The sliver came through at a greater rate, but the kemps and noils came with it. Old arrangements were reverted to when it was found that slipshod methods do not pay the man who has to weave slubby yarn. That point has had attention, but the young boss is still unconvinced of the error of sending his materials through "red hot." The stuff goes hot from the boxes into the combs and hot from them to the spindles, where naturally the fibers balloon unnecessarily. From the spindles the yarn goes hot to the weaving sheds without giving the wool the chance at any point to regain its silky handle. When there is nothing better to do than to work a little yarn to stock, where it would come into condition, the autocrat sends his help home. His critics may be wrong, but it is the

opinion of his most experienced men that this non-stop racing is a chief factor in keeping this mill just outside the circle of the recognized first class concerns.

* * *

Showing more indignation than is usual in him a manufacturer passed me a Yorkshire daily paper, in which his forefinger pointed tc an inoffensive advertisement. It ran: "Wanted by first class firm of fancy worsted manufacturers, High Class Designer. Apply to" ———, one of our most famous Yorkshire mills.

"What does it mean?" he demanded with some force. I suggested illness, death or unexpected peparture, which only added to his indignation.

"Dead be hanged!" he vociferated. "Who died last year at this season and the year before and the year before that? Why does this appear plumb in the middle of every pattern season when the patterns ought all to be practically ready. What do they want with a designer now when they have towards a dozen already?" As I professed ignorance he proceeded to answer his own question. "It means," he cried, "that they want summat cheap. They want a man from another mill and to find out what other folks are doing. Year after year they allus do it. And them 'at knows," he wound up at length savagely "———why they laugh at 'em." My friend was not laughing in pleasure.

* * *

The experience of some Huddersfield employers is that you do not get full value from a mill outing unless the guests are induced to write essays about it afterwards. The Crowthers offered prizes for these; old and young competed, sometimes in prose, sometimes in verse and on the whole the contestants were much funnier than they intended to be. Organizers of next year's outings may depend on an essay-writing feature to be both popular and amusing.

* * *

The specialization of function that is seen in the cotton and worsted trades in particular has its drawbacks as well as its advantages. The manufacturer who only spins or only combs learns on the whole to spin or comb well, but he works for his own advantage, which is not inevitably to the advantage of the next manufacturer who deals with the product. The spinner is found wishing that the comber had been less afraid of taking out noil, the weaver curses the speed at which the spinner ran his frames. Each sufferer, of course, tries to avoid repetition of his trouble by buying next time only the material that suits him and this ordinarily is merely a matter of paying the price. But these difficulties arising out of ignorance of the needs of the next man sometimes persist awkwardly.

* * *

The case is noted of a commission dyer who for two years has been dyeing cotton warp paramattas. The patterns sent to match have a warp of one color and filling of another not very different one. He is told explicitly and emphatically to match the pattern. He does his best, dyeing the cotton to the cotton shade, the worsted to the worsted shade in two baths. The effect of a slight error of judgment is to double the distance between the two shades and the merchant—who is also a specialized unit in the business—says, "These are wrong. These are 'shotty.' Our customer does not want and won't have these." And that is all that the dyer hears said. He does his best to remedy the error and perhaps spoils the goods or perhaps gets them accepted on condition of making no charge for his work. At all events he loses hundreds of dollars and purely because of a misunderstanding.

For one day there comes to the dye house the customer's customer who is shown the order patterns and is asked definitely to say whether he wants the cotton dyeing to the cotton and the wool to the wool absolutely or whether he will be satisfied by getting just the general air and tone of the original. The customer's customer states (what the immediate customer has always denied) that he wants the general effect, not necessarily the precise detail. As a result the dyer is able to doctor up the warp shades of twenty pieces rejected and these he sends in. The

customer tells him they are "beautiful," and remembering the losses and vexations of two solid years the dyer shows indications of a desire to faint.

The foregoing outlines one instance only taken from current life. Plenty more could be cited to prove that this want of touch is the salient weakness of the English system of organizing industry. The strength of the system is the one already named. The manufacturer performing only one operation learns to do that one well and even the small man is able to keep his plant at the same efficiency as that of his largest competitors.

STANDARD LENGTH AND WIDTH OF CLOTH.

Manchester, Eng., Oct. 4, 1909.

Editor Textile World Record:

Dear Sir: In answering a question by "Western" (1110), "Planet" refers to the practice of the Manchester Testing House in the matter of preparing samples for the well known strength test. It would appear from Planet's answer that this institution favors the test being made upon pieces 6 5/8 inches wide and 6 inches between the jaws, whereas in point of fact each of the dimensions following is in regular use for one purpose or another: 15 by 6, 15 by 5, 11 by 5 1/2 centimeters; 9 by 4, 9 by 5, 12 by 4, 8 by 4, 9 by 6 5/8, 9 by 3, 3 by 1, 2 by 1, 10 by 1, 9 by 1, 8 by 2, 4 by 2, 10 by 2 1/4, 12 by 1, 6 5/8 by 6 5/8 inches (between the jaws).

It may be of interest to point out that the smallest of the dimensions quoted has at one time or another been selected for experimental purposes, merely because the samples of material to hand were not large enough to admit of large dimensions being used. Some of the dimensions which involve fractional parts have been used in the past because the machine happened to be badly suited to its work, and the greatest possible width the machine could take was crammed into it. As far as I am aware none of the dimensions in use are based upon any consideration other than those of convenience to a particular machine. I may point out in passing, that a long and narrow sample is far preferable to a short and wide one, because any irregularities in tension between the two sides are eliminated, and a little carelessness in cramping the cloth is of less serious consequence. But on the other hand the disturbance to the side threads at the moment of fracture influences the result far more on a narrow, than on a broad sample. For most purposes I think the 9 by 4 inch test is the most convenient.

The method which "Planet" attributes to the U. S. Government, and of which I hear for the first time, strikes me as a marvelously complicated and unscientific affair, which I sincerely hope may not make its way across "the pond." We have difficulties enough with samples which will break close to the jaws of the machine, without directly encouraging such results.

But after all the strength test as used today only gives us the maximum load which a sample will stand under a set of conditions which never apply in practice, and until we progress a little further than this and test the work which is done in breaking a cloth, the precise dimensions of test pieces are of little more consequence than the size of machine so long as those dimensions are always the same for a given cloth or class of material.

If any authority will take upon itself the duty of reducing the absurd length of the list of customary dimensions I have given, and will set up reasonable standards, many will indeed be grateful, and out of that arises the suggestion as to whether the International Association for Testing Material would take up such a matter. It may be news to many that such an association exists, but having just attended their Triennial Congress at Copenhagen, when some five or seven hundred members from all parts of the world attended, and having seen their ways of dealing with specifications and tests of other materials, I incline to believe a matter of this sort should be discussed and decided there. The next Congress three years hence is to be in New York.

Yours faithfully,

J. H. LESTER.

OPENING AND MIXING COTTON.

By *LAKEWOOD.*

The best way to prepare cotton about 1 1/8 inch staple, for the picker room is to have the stock opened near the cotton house and put through an automatic feeder, built for heavy work, and delivered to a lattice. This in turn delivers the cotton to a conveyer pipe through which it is drawn or forced by an air current, to a condenser which delivers it to another lattice or conveyer. It is then delivered to bins back of another set of automatic feeders which deliver it directly or through a cleaning trunk to the breaker lapper. There should be two bins back of the feeders so one could be filling while the other is being emptied. This way necessitates a handling which is not done when delivered automatically to the feeders. The former method is preferable as the stock works better and has some time to expand after being opened.

When this method cannot be used the following is a good method:

The bales should have the ties cut and the bagging loosened some time before mixing. The cotton from one bale should be spread over the mixing bin in a thin layer and over this cotton from another bale and so on until the mixing is completed. No two bales of the same mark should directly follow one another. Mixing should be arranged so as to give as thorough a blend as possible. The cotton should age in the mixing for about three days before being used, so that it will run evenly.

Cotton taken directly from the bale does not work as well as it will if allowed to stand until it loosens up. If cotton is taken direct from the bale one day and the next day cotton that has been opened a day or more before used, it is very difficult to keep correct numbers, as the stock works differently, and there is trouble for all concerned.

The Hopper feeder should be kept about three-quarters full so as to give a regular feed. The spiked lifting apron should run about 75 ft. per minute and the stripper should be set close enough to the apron so as not to allow any large pieces of cotton to pass by. The change in the amount of feed may be regulated by moving the stripper roll either further from or nearer to the lifting apron or by changing the speed of the lifting apron. The former is a better method to a certain limit or until large pieces of stock get by, then it should be moved closer to the apron, and the speed of the apron increased to give the desired feed.

The opener beater, if of the porcupine or spiked style, should have a surface speed of from 400 to 600 ft. per minute. If of the blade type, it should deliver from 25 to 45 blows per inch of stock delivered by feed rolls. The breaker beater should deliver from 25 to 40 blows per inch of stock.

It is very essential that all air passages be kept free from dirt. The mote boxes and pockets of cleaning trunks should never be allowed to get over half full.

The beater should be set about 1/4 inch from feed roll, the first gred bar 3/4 inch from roll and 1/2 to 3/4 inch from path of beater and the distance to increase so the last bar will be from 3/4 to 1 inch from path of beater. The bar should be set on an angle so that heavy particles when hit by beater blade will pass between bars to mote box and the loose cotton will be drawn by the air current forward to the screens. The beater should be set close to the stripping plate, say 1/16 inch or less.

The distance the bars are set is governed by the quality of the stock run, the amount of dirt it is desired to remove, and the speed of the fans. It is well to set the bars from 1/8 to 1/4 inch apart at the nearest points. The idea is to get the largest amount of dirt and the smallest amount of stock and lint out. We consider good motes to contain about 80 per cent. sand or dirt and 20 per cent. lint, when cleaned in Picker seed opener.

There is in the neighborhood of about 8 per cent. waste taken out in the picker room and quite a large per cent. of it is dust that goes up the dust flue. This depends very largely on the stock used and the setting of beaters and grids and strength of air current.

Every lap from the finisher should be weighed and a record kept and all laps over 1/2 pound from standard should be set aside and marked so one light and one heavy one can be run side by side on the cards. The regulators should be attended to so as to make the variations as small as possible. It is not a good idea to put the laps back and run them over when they get a little off.

The picking room needs a lot of care and should be under a capable man who has time to look after things and keep everything in its place and running smoothly. Good laps and good work in the packing room is half the battle.

A LOOM PICKER.

An improved picker for looms, invented in Yorkshire, has recently been patented in this country. The inventor gives the following description of it: The picking strap has hitherto been secured to a head formed on the picker above the guide spindle on which the picker travels, or has been passed around a tubular bridge forming a part of the picker and through which the guide spindle passes. In both these arrangements the pull of the strap tends to twist the picker in exerting the requisite propelling effect, and consequently much power is wasted and the picker is subject to undue strain. The object of this invention is to connect the picking strap to the picker, so that the entire pull of the strap is used for propelling the picker, which reciprocates evenly and is not twisted or made to grip the guide spindle.

The picker is provided with a loose tubular sleeve or ferrule somewhat shorter than the width of the picker. This sleeve is placed within the picker between its vertical side walls. The guide spindle is passed through the side walls of the picker and through the sleeve, with a sliding fit, while the strap is passed between the walls of the picker and around the sleeve. The pull of the strap comes onto the loose ferrule and causes the latter to impart a direct end thrust to the picker, which is reciprocated evenly and not

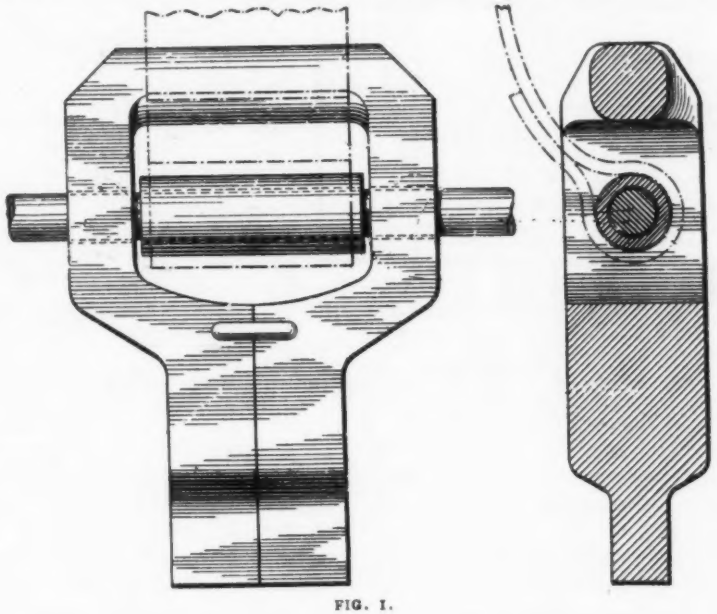


FIG. 1.

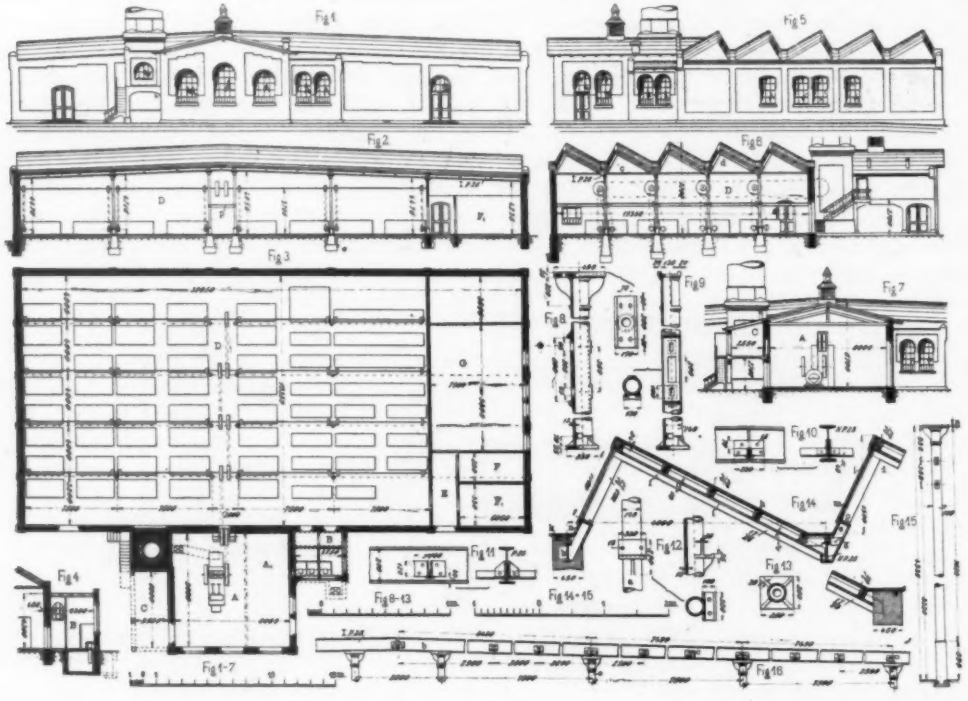
twisted or caused to grip the spindle. The sleeve is preferably made of heat-resisting material so as to prevent the frictional heat from the spindle being transferred to the strap; if desired, the sleeve may be provided with lubricating packing for automatically

lubricating the spindle during the travel of the picker.

Figs. 1 and 2 are a side elevation and a transverse section, showing the picker mounted on the guide spindle.

A WEAVING MILL.

Figs. 1 to 16 show the plan and details of construction of a weaving mill designed for Fl. Goth & Langer, Warnsdorf, Germany. It is arranged so as to enable it to be enlarged on three sides. The main mill is of a shed construction. On one side is the power house, A, to the left of which is the chimney and to the right the toilet rooms, B. The power house will accommodate a larger engine than the 25 h. p. engine shown in the illustration. The dotted lines indicate a temporary partition which separates a portion of the room to be used for a repair shop. Future extensions to the boiler house will be located to the left of the chimney. A portion of the main mill is separated by a partition from the weave room and this space is used for the entry-way, E, the wardrobes, F and F¹, and the warping and slashing room, G. The weave room has a main alley-way, 6 feet, 6 inches wide, above which the pulleys and belts driving the various counter shafts are located. The roof of the weave room is separated by posts, Figs. 8 and 9, which are 24 feet, 6 inches apart lengthways of the mill and 13 feet crossways. The roof is of the span type although of the saw tooth construction. Consequently it has an incline in two directions, Fig. 2. The construction of the roof and arrangements of posts will be understood by reference to Figs. 6 to 16.



Swinging windows that can be adjusted from below are placed at intervals in the roof to provide ventilation, and gutters are also provided to carry off the water of condensation.

The floor is of asphalt, which has the advantage of not being easily destroyed by the wear and tear of the work in the mill. The shafting and pulleys for driving the machin-

ery are placed at the highest part of the ceiling and the arrangement dispenses with a belt way which is open to several objections. This mill was built in 1908, the cost being as follows:

Excavation, mason and stone work,	$3,000
Roof with posts, beams and glass ...	3,740
Carpenter work on power house and toilet rooms and adjacent building	326
Inside construction	152
Chimney	1,000
	$8,218

Uhlands Technische Rundschau.

AN IMPROVED WORSTED COMB.

A drawing-off motion for Noble combs has recently been patented in this country and is described by the inventor as follows: Ordinarily each set of drawing-off rolls comprises two rolls both fluted, but only one of which is positively driven, an endless apron being employed which passes between the two rolls and around the non-driven roll and one or more other idler rolls. With such arrangement much difficulty has been experienced, if the sliver happens to break, in the liability of the broken end of the sliver being taken up by and wound upon the exposed positively-driven roll. As the roll is necessarily arranged close to the teeth of the comb, the winding up of the sliver thereon speedily results in a jamming or bending of such teeth and a serious damage and injury to the machine.

Attempts have been made to prevent this winding up of the broken sliver upon the drawing-off roll and the damage resulting therefrom by providing a third fluted roll loosely mounted in proximity to the drawing-off rolls and adapted to be rotated by frictional contact with the apron, the idea being that the third roll would lead the sliver away from the exposed drawing-off roll. It has been found, however, that the third fluted roll is ineffective to produce the desired result, and that, instead of always leading the sliver away from the exposed positively-driven roll, it frequently operates to carry the broken end to the positively-driven roll, with resulting damage and injury to the comb, the same as when such third roll was not employed.

The present invention consists primarily in the employment, in connection with the pair of drawing-off rolls and endless apron, of a third roll located on the delivery side of the drawing-off rolls and in positively driving the third roll, but at a slower speed than the positively-driven drawing-off roll and endless apron are driven.

A further feature of the invention consists in making this positively-driven roll plain instead of fluted, the plain roll being likewise driven at a slower rate of speed than the drawing-off rolls and endless apron.

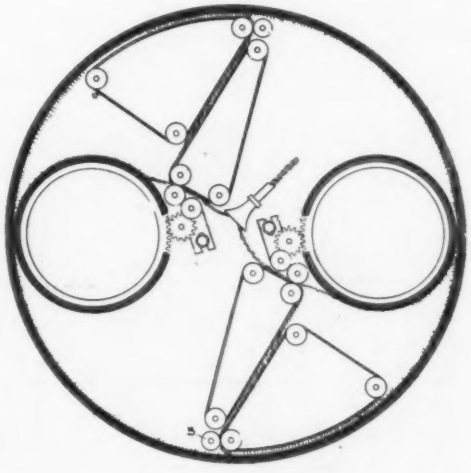


FIG. 1.

Fig. 1 is a plan of a comb showing the new arrangement; Fig. 2 shows the gears for driving the third roll; Fig. 3 is a side view of the parts shown at Fig. 2.

The liability of breakage of the sliver exists chiefly, if not entirely, in the case of the slivers from the small circle combs, and in the drawings the invention is shown only in connection with the drawing-off rolls for the small circle combs. If desired, however, the invention may also be employed in connection with the drawing-off rolls for the large

circle comb. The construction is the same in the case of the drawing-off rolls for each one of the two small circle combs.

The drawing-off roll is positively driven by suitable gearing in the usual manner. The third roll may be driven by any suitable means which will impart to said roll a speed slower than the speed of the drawing-off roll and of the endless apron, the speed of the apron being the same as the speed of the roll. In the drawings the roll is shown as driven from the gear of the small circle comb. The roll is provided at its lower end with a gear, which meshes with a gear loosely mounted on a stud secured to an arm of a bracket, this gear in turn meshing with the gear of the small circle comb. The ratio of these several gears is to be such that the roll will be revolved at a slower speed than the speed of the roll and the endless apron.

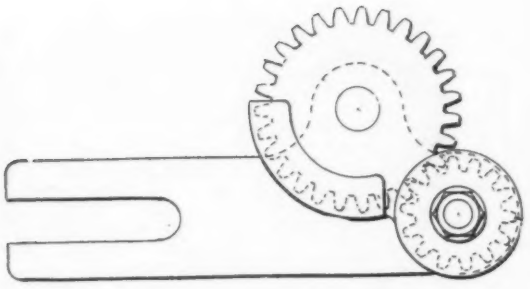


FIG. 2.

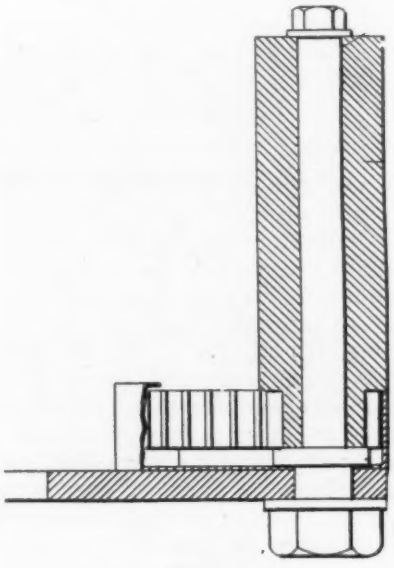


FIG. 3.

The German workman of today lives well, and is the best patron of the market halls, insisting on having fruits and vegetables with his meals, and enjoying frequent outings with his family. In the Chemnitz district the wages of textile workers have steadily risen.

ANCIENT TEXTILE ART.

BY CHAS. RICHARDS DODGE.

In the May number of the Textile World Record some interesting examples of Egyptian mummy cloths were illustrated, the oldest piece dating back to about 2000 B. C. Examples of mummy linens are still in a good state of preservation that were made at least 2500 B. C. More marvelous, however, is the story of the discovery in Europe of flax fabrics that were made—according to the calculations of archaeologists—from seven to eleven thousand years ago.

The winter 1853-'54 was, in Switzerland, so dry and cold that the water of the lakes subsided to such an extent that the natives were able to take advantage of the circumstances in one locality to reclaim a tract of ground and surround it with dykes. Digging in the mud large numbers of piles were discovered, and with them rough pottery, bone and stone implements, with other relics similar to those found in the Danish peat bogs. From these discoveries Dr. Keller of Zurich came to the conclusion that the ancient inhabitants of the Lake of Zurich had constructed their villages over the water. The Swiss lakes were therefore explored with energy, and through the

magnificent collections brought together by these explorations the entire system of a civilization, heretofore unknown, emerged from the darkness of oblivion.

The ancient lake dwellings of Wangen and Robenhausen are the most interesting in relation to the textile art of the Stone Age, as in no others were there found such an abundance of interesting evidences touching this

FIG. 1.

subject. The growth and manufacture of flax must have been important industries, for in addition to spindle whorls without number, flax in all stages from the unprepared straw, with the seed capsules still adhering, and in perfect preservation, to remarkable specimens of plaited and woven fabrics were brought to light. Thread, strings and yarns of flax were found, the latter wound in balls ready for the spinner, and rope and heavy cordage was also in evidence.

From the fine examples of these woven fabrics—mere fragments—preserved in the U. S. National Museum, I am able to present an illustration of one of the simpler forms, this particular piece having been chosen because it seemed to be in the best state of preservation. All of the examples are sealed between plates of glass, and all are black from having been carbonized by lying so many thousands of years at the bottom of the lake. In the series are plaited, wattled and woven cloths, the latter showing considerable skill, and a variety of forms. Fig. 1.

The means of fastening, binding and sewing is a primitive want that has been supplied by savage and semi-civilized tribes, in all ages, by the stems of grasses and reeds, the inner bark of trees and the bast of fibrous plants, or by the use of such animal substances as the sinews and intestines of animals, or their skins cut into strips. Without binding materials weapons could not have been fastened to handles; huts and dwellings could not have been constructed; nor many articles of necessity in the domestic economy made available. Binding and tying led to plaiting, and baskets

FIG. 2.

and mats came into existence. From plaiting it is but a step to weaving, the tying material having been worked finer, and twisted into a thread, which is spinning.

The lake dwellers employed all of these rude appliances of a primitive civilization,

using straw, reeds, rushes and the bast of trees, or the same substances combined with flax. Finally, becoming more skilled, weaving was attempted, with the more complicated knotting of yarns in the fashion of nets, and a textile industry was thus early established. No specimens of closely woven cloth were found in the explorations, nor have any fabrics been brought to light which, in uniformity and regularity of fabrication, can in any degree be compared with the textiles of

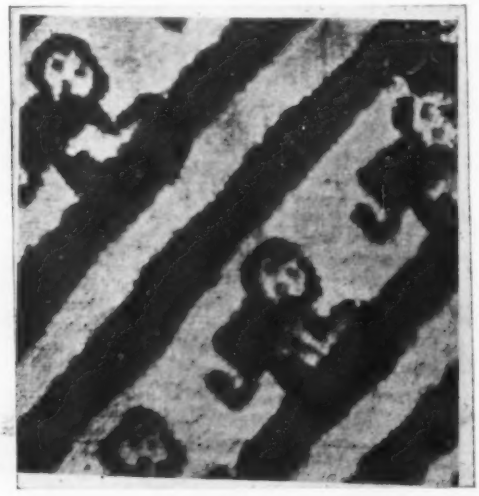


FIG. 3.

ancient Egypt, or of our time. One singular example is worthy of mention. Upon the surface of a piece of the well-known fabric of the lake dwellers various designs had been wrought by means of a needle and thread. A rude beginning, maybe, of that culture and aesthetic taste which in every age transforms the commonplace into the artistic and beautiful.

It should be stated that the stone age in Europe, which carries us back to the glacial period, embraces three epochs: The epoch of extinct animals such as the great cave bear and the mammoth, the epoch of migrated animals, as the reindeer, and the epoch of domesticated animals, also known as the polished stone epoch. In the bronze age, which followed, the art of spinning and weaving was so perfected that the rude spindles and looms employed are only slightly modified today by some of the uncivilized tribes of the earth that practice spinning and weaving.

I think it may be fairly assumed that the Swiss lake discoveries established the interesting fact that textile manufacture is contemporaneous with the discovery of fire, the fashioning of stone and bone implements, and the earliest manufacture of pottery—coming with the first faint dawn of industrial art.

Passing from the old world to the American continent, we find the records of another ancient civilization in the crumbling monuments and tombs of the ruined cities of the Incas in Peru. The tombs particularly, which have been so thoroughly explored, have yielded priceless treasures, throwing light upon the customs and modes of life of this ancient people, some of the most interesting of the relics secured being fabrics of marvelous design, which have escaped the ravages of time,

FIG. 4.

their beautiful colors as fresh today as when they were produced in forgotten ages.

It is too long a story to consider details here, but I have been able to secure photographs of several typical examples of the fabrics, particularly from the Alexander Pope collection in the United States National Mu-

seum, which are presented with a few words of general explanation.

The best examples of these fabrics are from the Necropolis of Ancon on the coast of Lima, though many other localities have been made to yield their treasures. The material employed was chiefly cotton and wool, the textiles having been produced upon simple hand looms from yarns spun in a primitive way. They are evidently from a single period, wrought in an almost grotesque scheme of geometric decorative design, upon which is rung many changes. The use of highly conventionalized figures of human and animal forms is particularly striking.

By far the greater portion of the cloths and richly ornamented garments found were wrapped about the bodies of the dead, and to secure them they were unfolded bit by bit, though in some instances beautiful examples were discovered in rolls, baskets, nets and vases. Regarding the grade of culture represented by these fabrics Prof. W. H. Holmes makes the comment that the quality of the work would seem to be very high considering American products only, but its equivalent in old world culture must be sought in remote ages. The closest analogy seems to place them with some Egyptian fabrics of the first few centuries of the Christian era. Not only cotton, but other vegetable fibres were employed, including the Agave (allied to the sisal hemp of our time.) The animal fibre was probably the wool or hair from llama, the alpaca, the vicuna and the guanaco. Regarding the brilliant and permanent dyes which were employed to produce these exquisite effects we unfortunately know nothing. The devices for producing these fabrics were rudely simple. The spindles were made of wood, weighted with terra cotta whorls of artistic finish. It is supposed that the yarns were twisted by twirling the shaft of the spindle between the fingers and thumb, or between the flat palm and some part of the person, as a shoemaker rolls his waxed ends upon his thigh. Besides spinning implements, needles and devices for sewing, netting and embroidering were found, fashioned from wood, bone and copper.

The form of loom employed in the weaving can only be conjectured, but the looms of primitive people are always the same: a framework to hold the web and some simple device or form of shuttle with which to part the threads of the warp in laying the yarns that form the weft. An unfinished piece of gobelins found in a grave by Wiener was attached to two poles, one of which was doubtless secured to a fixed object, while the other may have been attached to the person of the workman. I have seen a similar device in Mexico, and it is in use in a commercial establishment today.

The fabrics were employed for clothing, which comprised vest and smock-like body garments, the most common form of outer garment corresponding to the poncho, still used in South America. A flowing robe or mantle of the Talaria style was also employed, though its use can only be conjectured. Loosely woven cloths, loin girdles, head dress and coverings for the feet completed this graceful but semi-barbaric costume. The fabrics were also employed for house decoration, such as draperies for doors and walls, for blankets and awnings, besides banners and rich fabrics used in ceremonials. Notwithstanding the richness of color produced, which is often gorgeous, a purity of design and refinement of chromatic effect is conceded, to a remarkable degree, by writers upon the subject.

As to the age of these fabrics, no statements can be made, but there are proofs of the great antiquity of the Inca civilization which need not be dilated upon here. And there is every reason to believe that a powerful empire existed in Peru centuries before the rise of the Inca dynasty.

Referring to the illustrations, Fig. 2 is a fragment of a girdle very much reduced. Note the conventionalized human figure in the design. Fig. 3 is a section of a large fabric, greatly reduced, showing in the design a grotesque animal form. Fig. 4 is a plain loosely woven cloth in gray, with reddish brown figures; photographed natural size. The negatives were made especially for this article, by the author.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Formula for Finding Speed Gear.

Editor Textile World Record:

Would you kindly explain the following formula respecting twist for Asa Lees mules:

To find speed wheel: 1.57 × rim pinion × working diameter of wharves × diameter of front roller × diameter of tin roller pulley × twist per inch ÷ diameter of tin roller × diameter of rim.

The 1.57 occurs in finding twist per inch also, and I would like to know what it represents? Would also like to see the twist constant figured from the following items:

Bevel on front roller spindle 45 teeth, gearing into bevel on stud of 15 teeth, which is compounded on same stud with a gear of 60 teeth, which meshes with a speed wheel of 56 teeth, which gears into a rim pinion of 30 teeth. Diameter of rim is 17 inches, diameter of front roller is 1 inch, diameter of tin roller pulley 10 inches, diameter of cylinder 6 inches, diameter of spindle wharve 1 inch. Eastern (1118).

The formula submitted in connection with Asa Lee's mule may be better explained by the use of the accompanying sketch, which represents the gearing of an Asa Lee mule, and which covers the items comprising the equation or formula given, viz.:

1.57 × rim pinion × working diameter of spindle wharve × diameter of front roll × diameter of cylinder pulley or tin roller pulley × turns per inch required ÷ diameter of cylinder or tin roller × diameter of rim pulley = size of speed gear.

In the first place your correspondent wishes to know what the 1.57 represents, and to explain this as clearly as possible, the following facts must be understood: first, that the turns per inch represent the revolutions of the spindle for every inch delivered from the front roll; second, that if the same items are used on each side of the line in the equation, the result will be the same no matter in what order they are placed.

Referring to the sketch, and commencing with the gear on front roll shaft (I use the term shaft instead of spindle, for the portion of the front roll which crosses the front of the headstock and carries the front roll gears, this eliminates the chance of getting this rod confused with the spinning spindle), then following the gears to the speed gear we obtain the following:

The bevel gear, A, has usually 48 teeth, and the bevel gear, B, has usually 24 teeth; therefore A makes one-half a revolution for every revolution of B; and as one-half a revolution of A equals one-half a revolution of the front roll, the inches delivered from the front roll for every revolution of B will be one-half of 3.1416 inches (3.1416 inches are delivered for one revolution of a roll one inch in diameter), which gives 3.1416 ÷ 2 = 1.57 inches.

In other words the front roll delivers 1.57 inches for every revolution of bevel B; when A is twice the size of B.

If however a different proportion of gearing is used at A and B the 1.57 cannot be used as a constant number but must be changed in proportion to the gearing.

Again referring to the sketch we find a 60 gear on the same stud as B meshing into another 60 on same stud as the speed change gear, which in this case becomes also the twist change gear.

On account of each having 60 teeth one will revolve the same speed as the other, and as the one connected with B makes the same rvolutions as B, it follows that the two 60 gears and the speed gear make the same revolutions as B, it follows that the two 60 each 1.57 inches delivered, assuming front roll to be 1 inch in diameter; any other diameter of front roll would give 1.57 × diameter = inches.

Keeping in mind that one revolution of speed gear gives 1.57 inches from the front

roll, we will take up the rest of the formula.

One of the items shown is turns per inch, and as none were given we will assume 33s yarn is to be made with 18.6 turns per inch.

Now if 1.57 inches are delivered per revolution of speed gear, and there are 18.6 turns per inch, the spindle must make 1.57 × 18.6 = 29.2 revolutions to each revolution of speed gear.

Up to this point a summary of the solution represents

Bevel gear B 24 × 60 × 3.1416 (circumference of 1 inch roll) ÷ bevel gear A 48 × 60 = 1.57 inches per revolution of speed gear, and

1.57 × 1 inch (diameter of front roll) × 18.6 (turns per inch) = 29.2 revolutions of spindle per revolution of speed gear.

The next step is to find out how many teeth the speed gear must contain in order to give the spindles 29.2 revolutions for each revolution of itself.

This may be obtained as follows:

29.2 (spindle speed) × 1 inch (working diameter of wharve) × 10 inch (tin roller pulley) × 30 (rim pinion) ÷ 6 inch (diameter of tin roller) × 17 inch (rim pulley) × 1 (revolution of speed gear) = 86 teeth, size of speed gear required.

P. S.—It will be observed that one inch has been used as working diameter of wharve; this would mean that the actual diameter is 15/16 inch; as Asa Lee's usually allow 1/16 inch extra for the spindle band.

The writer does not think that the above equation is quite the clearest way of giving the desired result, except to one familiar with the machine on which the calculation is to be made, or one having a good knowledge of twist calculations generally.

I therefore answer the last part of the question by giving a rule that can be followed on any machine, and applying same to the gears submitted.

Starting with the gear, A, on the front roll as the first driver, and following the connection from this gear to the spindle, divide the product of the driving gears by the product of the driven gears and circumference of the front roll. (N. B.—The diameter of the pulleys are used the same as the teeth in the gears.) The sketch can be used again by simply putting the size of the gears and pulleys in place of the letters or names; therefore with A as 45 teeth, B as 15 teeth, and speed gear as 56 teeth, we obtain the following equation, providing the other particulars are the same as in the sketch. P. S. —Add 1/16 inch to the diameter of wharve for working diameter.

45 × 60 × speed gear × 17 inches × 6 inches ÷ 15 × 60 × 30 × 10 inches × 17/16 inch × 1 inch × 3.1416 = .3055 twist constant.

Now by multiplying the above constant by the size of the speed gear, we obtain .3055 × 56 = 17.11 turns per inch.

If on the other hand we wish to know what size of gear would be needed for a given number of turns per inch, divide the turns required by the constant.

For example: How many teeth must the speed gear contain to give 18.3 turns per inch? Then

18.3 ÷ .3055 = 60 speed gear required.

Bolster.

Automatic Attatchment for Knitting Machines.

Editor Textile World Record:

Do the circular latch needle foot machines, fine gauges, have an automatic adjustment at heel and toe, or is the splice yarn simply added to the body size, thus causing the machine to knit tighter at those points? Avon (1121).

All of the full automatic seamless machines have an automatic adjustment for loosening the stitch in heel and toe when splicing yarn is used. This is regulated so as to knit any tension desired in heel and toe, enabling the knitter to use either heavy or light thread for splicing as desired.

Merrill.

On all full automatic seamless machines a change in the length of the stitch is made at the same time that the splice yarn is run in to reinforce the heel and toe. If the stitch was not lengthened at this point, the fabric would be knit too tight and the elasticity would be destroyed in the degree that the

heavier splicing yarn was used. The best result is obtained by lengthening the stitch in the heel and toe sufficient to make it equally elastic with the single knitting, thereby making a uniform fabric which will stretch in the same proportion at all points.

All the late seamless machines possess this automatic regulating device, which can be adjusted to draw any desired length of stitch all the time that the splicing yarn is being run in, and it is accomplished in the simplest manner by raising the cylinder, thereby compelling the needles to draw deeper into the sinkers and in consequence to pull longer loops. Pavonia.

Finishing Mohair Dress Goods.

Editor Textile World Record:

We are thinking of going into the manufacture of mohairs. Have you any information about the finishing process? Hanson (1123).

This inquiry was sent to our representative at Bradford, England, who writes as follows:

A finisher with whom I talked has had a good deal of experience especially in alpacas and lusters, which are treated in the same manner as mohairs, but not always as thoroughly. I asked him how they handle bright goods.

"If you mean mixtures (i. e., yarn dyes)," he said, "after singeing we just passed them through a five-hole squeezer, two troughs of soap and three of water, give them beans on the drying cans and sent them to the press shop. If you mean goods for dyeing, we singed them on a plate machine, scour them in the crab, get them steam blown and send them to the dyehouse. The main points in mohair finishing are good crabbing, pressing and singeing."

Going further into detail the finisher says he has not been accustomed to use a great deal of soap. He used in scouring a little Gallipoli oil soap and to every five pieces about 1 1/2 pounds of alkali, or less in the case of yarn-dyes. He found the oil to be sufficiently removed when the cloth ran from the scouring solution through two troughs of hot water. To obtain the right luster a great deal of tension is put on the fabric in drying and crabbing. He used to have on the drier as many as seven drag cans, of which the set screws had been loosened so that they were no longer positively driven, but had to be dragged around by the cloth. In a word the treatment was as severe as could be given without "watering" the fabric.

The finisher has not been a presser of mohairs and could not tell what the relative effects were of weight and heat in raising luster. The goods require a hot pressing and the finisher states that they would still need to be pressed between papers even if put through a rotary machine.

I can add to the finisher's remarks that there certainly are finishers who scour mohairs in two or three bowl dollies, keeping the goods carefully at width to prevent breaking the fibers. There is reason to think that heat and the time between press papers are fully as important as the degree of pressure.

I have also had the advantage of a talk with a good commission dyer regarding the finish of mohairs. The purport of it is that to finish mohairs one must have a five hole squeezer in order to obtain an adequate scouring. As the finisher said, the pieces do indeed get "beans on the cans" (drying cylinders). In the ordinary way 120 yards loom length produces 133 yards of finished cloth. My informant is certain of this because he pays his pressers by the yard, and experience tells him to add 10 per cent. to the gray cloth in calculating.

My friend lays stress on the necessity of having a good copper plate singeing apparatus and of keeping the plate in good condition by planing or renewal. Plates costing him $300 each last but a few months when used constantly. He adds a useful hint on pressing. "Mohairs," says he, "need just a squeeze between warm papers. Make them too hot and you get a dull glaze that is not at all satisfactory. Press them very hard and you destroy the springy, lofty, bulky character that is one of the leading desiderata." "Scour clean and press lightly" is his advice in a nutshell. Wessex.

Woolen and Worsted Organization in England.

Editor Textile World Record:

I have been told that the worsted industry in Great Britain is very much subdivided into separate trades. Is the carded woolen industry similarly split up? Or does the woolen manufacturer, as a rule, card, spin and weave all in the one mill?

Aquila (1104).

Our English correspondent replies as follows:

There is the greatest difference between the general organization of the worsted and the carded woolen trades in the United Kingdom. For illustration, follow a parcel of wool through its worsted manufacturing progress. First the wool falls into the hands of the top-maker; he buys wool and sells tops and has the combing done either in his own shed or more usually at a commission comber's a spinner buys the tops and he draws and spins them; a colored yarn spinner employs a commission dyer and often a commission recomber. The "manufacturer" (by this name weaver is always implied) buys yarn and sells cloth. Common clays, serges and plain dress goods are frequently sold gray to a home or export merchant who puts out the dyeing and finishing to commission works. This outline sketches the ordinary routine.

There are worsted firms describing themselves as "spinners and manufacturers" who have spinning and weaving departments. There are spinners also who have a few combs. Generally speaking you do not find in the English worsted trade any perfectly symmetrical and self-contained plants. Statistics show that England turns out 35,000,000 pounds more of tops than it spins and 70,000,000 pounds more of yarn than it weaves. These quantities are exported and the spinning departments of "spinners and manufacturers'" mills engage just as freely in this export yarn trade as do other spinners. The spinning department spins for the market and usualy supplies only a portion of the total of yarn needed for the looms. The spinner confines himself to his own range of counts and qualities.

In the carded woolen trade of England, and indeed of all Europe, an entirely different condition exists. It is the rule, not the exception, for the woolen man to have carding just sufficient for his spindles and spindles exactly to correspond with the looms. England produces 70,000,000 pounds more of worsted yarn than it weaves; it produces only 2,000,000 pounds more of woolen yarn, —of which some is presumably for knitters. There are "yarn-spinners," as woolen-spinners are known, producing yarn only for the knitting and certain other trades, but these form an insignificant minority. Again there are spinners and manufacturers in Scotland and elsewhere turning out special yarns which are bought for special purposes, partly by the worsted trade. Also there is about 26,000,000 pounds of woolen yarn imported from Belgium and Germany. Most of this is different in fineness and quality from any spun in this country and is used in shirtings and dress goods. The regular manufacturer of tweeds buys his material raw and puts it through all processes himself, with the possible exception of carbonizing, dyeing and finishing. It is in buying well and carding well that the woolen man calculates on making his profit and in his branch, mills which perform every process from wool-sorting to cloth-finishing are by far more common than in the other.

I have answered "Aquila" in matters of fact and now add that in its lines of organization the Yorkshire worsted trade follows the Lancashire cotton trade. The main difference is that there is no futures market for wool tops, although some dealers wish there were. If it is asked which system is the better, the cotton and worsted or the woolen, it can be said that the high and dry economists argue that the former gives the more efficient results from the standpoint of pure economy. It is certainly the case that the comber finds combing absorbs all his attention, while worsted spinners and worsted manufacturers can find all the work they require in supervising just their own set of operations. Under the worsted organization sharp, open competition is focused on each individual point and the points are

rubbed down to exceeding fineness. But not much is wasted in the Yorkshire woolen mills and the Colne Valley thinks it is losing money not to work nights as well as days.

Romulus.

Weighting Bed Spreads.

Philadelphia, Pa., Oct. 20, 1909.

Editor Textile World Record:

We note in the October issue a question regarding the weighting of bed spreads. We feel that a suggestion from us might be of some use to "Samosett." Judging from their cut of mangle and drying cans, we would advise increasing the speed of the brass roller about 15 to 20 per cent. and using about 5 to 10 per cent. of China clay in his starch mixture. The increased friction will rub in as much weight as they desire. If the material comes out too stiff "Samosett" can very readily break the same down with the calenders.

Jasper.

Editor Textile World Record:

In the October issue on page 136 is a question relating to the weighting of bed spreads, answered by Crawford. As this is right in my line I should like to be of assistance to "Samosett." Bed spreads can be weighted quite heavy if they are treated carefully. "Crawford" must be a very conscientious man if he increases his picks and puts heavier yarn in when he wants a heavier spread. The machinery, as shown by "Samosett," is arranged in the right manner, excepting that he may have trouble in keeping the spreads straight as they pass through the starch mangle and drying cans, and thus come out at the delivery end twisted and out of shape. With the right mixture, careful handling and the proper adjustment of the mangle, the weight can be increased from 25 to 30 per cent., and probably more if the spreads are of a very absorbent nature. I would not say definitely what percentage could be put into them, not knowing the quality of the spreads. The following mixture may be used and if it does not weight the spreads enough "Samosett" can change the proportions until he gets what he requires. I presume he understands how to make and boil a mixture of size for this purpose without any instructions. For a medium quality spread that he wishes to put a little weight in and give a good body to, the following mixture may be used:

50 lbs. corn starch,
35 lbs. potato starch,
50 lbs. epsom salts,
3 qts. chloride of zinc,
3 gals. mixed clay,
100 gals. water.

If the goods are white, blue to the shade desired. When using clay for filling purposes mix it up in an agitator and put a steam pipe in the box so that it can be boiled up before adding to the mixture. Mix this in the proportion of 1 1/2 pounds of clay to each gallon of water. Then boil for 10 to 15 minutes. When the mixture is prepared be careful with the mangle and not let the goods come off too wet, so that they will stick on the dryers.

If the above mixture is not suitable, the following may be used:

30 lbs. corn starch,
30 lbs. potato starch,
30 lbs. dextrine,
30 lbs. epsom salts,
50 lbs. barytes,
5 lbs. cocoa oil,
80 gals. water.

If the mixtures are all right for the weighting required, but leave the goods too stiff, use more softener. If the spreads are not heavy enough use more weighting, always being careful to use enough starch in the mixture to bind the weighting with the size.

The following is a list of weighting materials that may be used: Clay, talc, mineral, salts, barytes and chloride of zinc. The softeners used are: Soluble oil, cocoa oil, oleine and oil soaps. The binders used are starches of different kinds, dextrine and flour.

Alpha.

From 50,000 to 60,000 tons of cotton are used yearly in Muelhausen, from a quarter to a third being Egyptian, and the rest American and Indian.

Elastic Fabric Without Rubber.

Editor Textile World Record:

Can you give me some idea as to how the enclosed sample of elastic bandage is made? When it is stretched it looks like a plain weave. What process is the warp put through to make it so elastic? Eiderdown (1127).

The sample enclosed is similar to the fabric mentioned in the inquiry No. 709 in our October, 1906, issue. The reply to that question was:

The sample received with this enquiry is a cotton fabric that is very elastic filling ways. This elasticity is due entirely to the filling yarn being a two-ply yarn twisted very hard. As soon as the cloth is woven with this hard twisted filling it contracts by reason of the hard twist. Upon measuring a sample of the cloth, raveling a thread of the filling from it and then measuring the filling when stretched to its full length we find that the cloth crossways is 45 per cent. of the length of the filling yarn when stretched. The filling raveled from the sample 1.8 inches wide measures 4 inches long when stretched out. The warp is a soft-twisted single yarn. An analysis of this fabric gives the following results:

Weight, 2 1/6 yards per pound.

Warp, 39 threads single 11s per inch.

Filling, 43 threads 2/12s per inch.

Weave, plain.

The sizes given here are as the yarn lies in the finished cloth. As the filling in the cloth is but 45 per cent. of the length when stretched out, the count of the yarn when stretched is found as follows:

6 (count in cloth) ÷ .45 (per cent. of yield) = 13 1/3, or 2/27s, stretched count of filling.

This cloth can be made on any ordinary loom, as there is nothing special in the method of weaving. Care must be taken to lay the warp wide enough in the reed to allow for the contraction after it leaves the loom.

The average wage of a weaver in Germany runs from $3.75 to $4.50 per week, while the spinners make about $7.50 per week.

Napping Canton Flannel.

Editor Textile World Record:

We are interested in the manufacture of Canton flannel. We wish to get a machine that will produce a long open nap like that on sample which we enclose. We have corresponded with four or five manufacturers of napping machines in the United States, but none of them claim to make a machine that will produce this result. Several tell us that the mills which make this Canton flannel make their own machines for this purpose, but we are unable to get any more definite information. Memphis (1125).

The nap on this sample is very similar to what is often called "old-fashioned Canton flannel style of nap." Most cotton goods as you know, are napped on large planetary or French napping machines, but these machines would not give exactly the same effect as the old style Canton flannel nappers gave. In most cases the machines for napping Canton flannel have been made by the mills as referred to, but we can easily supply them, if wanted. Most of the machines made by the mills have been wood frame machines, but our napper is an iron frame napper.

This napper has been used largely for low grade woolen goods, especially with cotton warp, and they will also do good work in napping Canton flannel and similar cotton goods. The principle of the napper is just the same as that of the old style Canton flannel nappers, but the machine is more conveniently arranged than any of the home made wood frame machines. There are two napping cylinders 18 inches in diameter with a spreader roll for each cylinder to clean the clothing on the napper cylinders. The amount of contact is easily adjusted by hand wheels and the cloth is quickly thrown off from the cylinders when the seams go through, if necessary, and can be brought back to exactly the same position as before by means of the hand lever. We have furnished these nappers to several parties for napping cotton goods similar to the sample.

Curtis & Marble Machine Co.

The census of cotton consumption and invisible supply of Aug. 31, 1908, includes 11,217,883 spindles out of an estimated total of 128,923,659 for the world.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

October has been a busy month for all interested in the knit underwear end of the business. To begin with, the weather conditions have been ideal for a splendid retail business which has reflected itself in jobbing houses and mills. Stocks in the hands of jobbers and retailers were only of an average size and the demand for duplicates reached a large volume in a very short time. To liven up matters further, it was found necessary for manufacturers to advance their prices to keep up with the raw material conditions. These advances were quickly accepted by the buyers wherever deliveries could be promised within a short time.

The general activity in fall lines has also had the effect of stimulating duplicate business on spring goods. Wherever moderate advances were asked and fairly early deliveries promised, orders have been placed quite freely during the past month.

Some manufacturers of men's 50 cent balbriggans state they are not in a position to make any more goods than they have now sold, during the entire season and claim that the present price of yarn is such that an advance of 50 cents per dozen would have to be made over their early prices were they in a position to accept any business. Men's low priced balbriggans have been advanced again during the past month and some lines that were offered in July as low as $1.70 are now held at $1.95 and others that sold at $1.90 are now priced at $2.15 and these only for late delivery.

Manufacturers of low priced straight ribbed vests are asking advances of from 5 to 10 cents per dozen and some of the lines that sold early at $1.75 are now held at $1.90. One prominent manufacturer of ladies' shaped ribbed goods who has only a dozen customers on his books was obliged to cut down his orders on cotton vests and pants nearly 50 per cent. on account of the great increase in the amount of business tendered him on lisle thread goods and ladies' combination suits.

Jobbers report that the retail trade are placing orders very freely for all lines of spring goods and particularly on the plain stitch shaped goods that were sold early by the manufacturers at $1.75 to $1.85. While some objection is heard to the seams on the sides of the vests, yet there are many who state their belief that summer weight plain stitch goods will soon take the place of tuck stitches to as great an extent as they have in the 50 cent winter weights at the present time.

The Oak Knitting Co. of Syracuse have been delivering some plain stitch six pound bleached goods during the fall just past at $2.00 per dozen. We are told they have been in great demand, but the advance in the price of yarn has raised them beyond the limit that jobbers care to pay.

Wool and worsted lines are not usually changed in price during the season, but this is one of the exceptions and we learn of some advances of from $1.00 to $1.50 per dozen on lines of goods that get to the retailer for $1.00 and $1.50 grades.

The Waterford Knitting Co. have advanced one number of men's scarlets from $9.00 less 12 1/2 per cent. to $9.00 net.

The George H. McDowell & Co. have notified their trade that while their prices remain the same, many of their qualities will be reduced to the percentage used in 1908.

The Avalon Knitwear Co. have started out to solicit business for fall, 1910. They claim to be in a position in regard to yarn purchase to enable them to sell a portion of their production at an advance of 12 1/2 cents per dozen on their vests and pants and 25 cents per dozen on their suits over last year's prices. We are told that jobbers are placing their orders quite freely. This concern is also showing men's 12 pound suits made on the interlock machine at

$9.00 per dozen which promises to be a good selling line.

Men's fleeced goods situation has been well cleared up during the past month, and some stock lots have been disposed of at fairly good prices, and manufacturers have advanced their prices from $3.37 1/2 to $3.50 and from $3.75 to $3.87 1/2, and on some styles as high as $4.00, and claim to be getting liberal duplicates at these advances.

Men's ribbed goods that sold early at $3.37 1/2 are now held at $3.75 to make, but there are some few stock lots in the market still being offered as low as $3.50.

A change is taking place in the colors wanted in men's heavy ribbed shirts and drawers. We get from retailers the information that the blues are not as desirable as heretofore and that while ecrues maintain the lead, there is a great demand this season for silver grey.

We are informed by several jobbers that the new system of selling children's ribs and children's fleeces with the 12 1/2 cent rise has worked out very satisfactorily. They state that under the old plan of selling these goods with a rise of 25 cents on each size that they were continually having trouble with both the manufacturers and their customers on account of taking so many small sizes in the children's range and the large sizes in the boy's range, but that this season the difficulty has been obviated. It is hoped that other manufacturers will adopt the same system of pricing this class of goods with rise and fall on each size that will permit a buyer to take any scale of sizes he may desire and know what it is to cost him when he places the order.

HOSIERY.

Retailers are buying women's colored hose again for 1910 delivery and there is every prospect of this class of goods being very popular for another season. The orders placed on these goods in Chemnitz are heavy and the shades selected are much the same as those that were popular the past season.

Lace hose seems destined to become popular again and it is our belief that many more of these will be used in 1910 than for the past few seasons, though trade was good on them in 1909. In connection with lace hose, Chemnitz reports that the large stocks that were on hand have been nearly all sold and that while many good numbers were offered early at M6, these have now all been advanced to M6.60. Styles are plentiful at M8, but the new floral designs cannot be bought now at less than M8.80 and only a few manufacturers are selling them at this figure, the majority asking M10.50.

It is not generally believed that tans will be quite as strong as they have been for the past few seasons, but liberal orders are being placed nevertheless.

Some shoe manufacturers predict another big season for bronze and if this should happen to be right, there will unquestionably be another mad scramble for bronze hose, as only very scant orders are now being placed on them.

Prices on all classes of staple goods are advancing by leaps and bounds, but jobbers are as yet selling at old prices, and will not make any advances until absolutely forced to do so through having sold their early purchases and having had to pay the advances.

Women's cotton hose that were sold early by manufacturers at 65 cents are now priced at 72 1/2 cents. This is a fair example of the advances taking place.

The Chemnitz market has changed but little in the last three or four weeks, and while the orders received do not total up to those received in previous years, trade is claimed to be very satisfactory in certain lines. Makers of 39 and 42 gauge hose are very busy and many of them have enough orders booked to keep them busy until February. Their prices on these goods are beginning to advance, owing to the fact that manufacturers have about used up the yarn that they owned at old prices.

Women's embroidered hose are said to be selling in about the same proportion that they were this past season. Silk clocked hose for women and men are considered very good.

Chemnitz also reports that fancy hose and

half hose are very slow and makers of jacquard goods have very few orders on their books. Their prices, however, have not been lowered and the reason given for this is that a cut in price would not bring any more orders, even if such a thing was possible with the expensive materials used.

Prices in Chemnitz remain firm for advance orders, but concessions can be had on any stock lots for immediate shipment. The orders received by German manufacturers are comparatively small as importers are buying goods just about as they need them.

There is not much business being done in Germany on women's split foot hose, for the reason that the lowest priced goods offered in a fairly good quality is M4.20 and even at this price they are only stock lots which cannot be duplicated at less than M4.40.

FULL FASHIONED KNITTING.

BY PAVONIA.

(Continued from October.)

The motion of next importance is probably that which actuates the sinkers. This function, like the needle bar, requires for its operation two independent cams. Those which operate the horizontal movements of the sinkers, 5a, Fig. 8, are called catch bar cams. The sinkers have but one line of motion, backward and forward, but the process of knitting requires that the device for operating them shall have both a perpendicular and a horizontal movement, and consequently, a set of cam arms and rollers connected to a separate line of shaft is required to give each of these distinct operations their own peculiar action. Fig. 18 shows how the backward and forward motion is imparted to the sinkers. Fig. 19 shows the automatic arrangement for lifting and lowering the catch bar according to the requirements for catching or releasing of the sinkers. Fig. 21 shows the cams at A and the catch bar in working position with both needle bar motions. The shaft, W, Fig. 18, and the shaft, X, Fig. 19, both run the entire length of the machine. The action of the horizontal movement can be plainly seen in Fig. 18, the dotted lines showing the direction of motion of the arms, which is of course varied by the shape of the cams. The dotted lines in Fig. 19 show the position of the vertical apparatus when at its high point. This vertical motion of the catch bar is not varied. There are simply the two positions; up, to free the sinkers, and down, to combine them into uniform action. The vertical motion, Fig. 19, of the catch bar is for the purpose of raising it from the sinkers during the operation of drawing the loops, and for lowering it in preparation for knitting the loops into fabric. In the forward motion during the

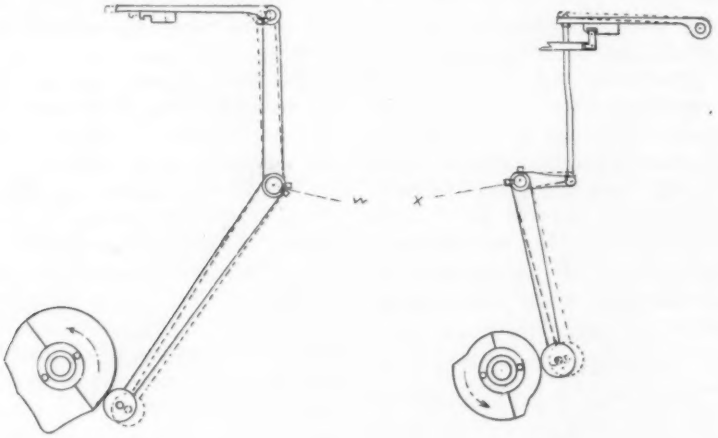


FIG. 18.

FIG. 19.

drawing of the loops, the sinkers do not work simultaneously as in every other motion, or in unison as the needles do, but they move forward consecutively in the same manner in which latch needles draw

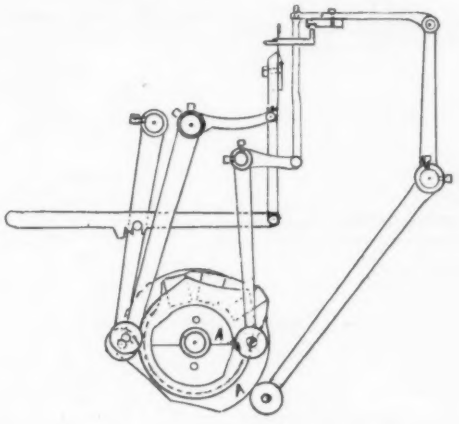


FIG. 21.

the loops on a circular machine. After the loops are drawn, the sinkers being free, it is necessary for the catch bar to move forward in the path over which the sinkers have moved, and then to be lowered on to the sinkers to effect their united action again.

Before investigating these sinker catch bar actions, we will examine the mechanisms which cause the sinkers to be thrust forward for the drawing of the stitches or loops, and for which purpose the catch bar is raised. Fig. 22 shows the device used for throwing the sinkers forward. A cast-iron box, Y, slides on the steel bar, S. The steel bar is called the slur bar or slide bar, and it is used to convey the slide boxes in a straight path, parallel to the sinker heads and needle bars. The slide boxes are used for a number of purposes, varying on the different builds of cotton machines. The kind given in Fig. 22 is the very simplest form in which they are used, having only one function, that of carrying the slur cocks, to perform.

It is the slur cock, Z, that is responsible for the consecutive thrusting forward of the sinkers during their act of drawing the loops. The slur bar extends over the entire length of the machine, and is secured to the frame by screws and pins. Heretofore, we have been dealing with motions actuated by swinging arms directly from the main cam shaft, but to give the slur box its motion, it becomes necessary to use a cam with a side

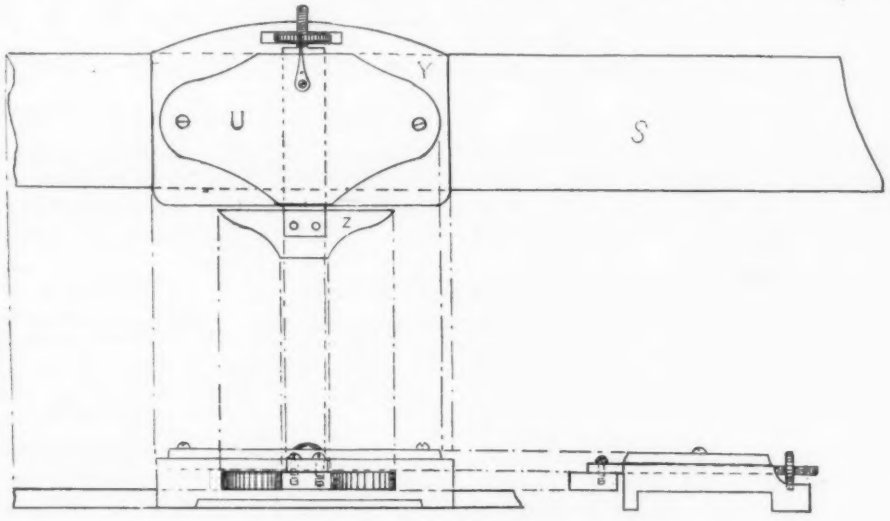


FIG. 22.

thrust, to give a motion at right angles to the line of motion of the needle bars and sinkers. As one faces the machine, Fig. 8 or Fig. 15, the slur bar motion is from left to right and right to left. All previous

motions have been free from any side movement whatever.

The width of an ordinary knitting head for ladies' hose is about 13 1/2 inches. This would necessitate throwing out all the sinkers, a distance of 13 1/2 inches, but as these sinkers must be brought back again to their original position before being thrust forward again, it is necessary that the slur cocks move farther than the extreme end of the section of the sinkers. The side motion of the slur cocks and boxes on the slur bar is about 18 inches.

To establish this longitudinal line of motion, a pair of beveled gears are used, a small one on the main cam shaft and one twice as large on a short shaft running horizontally and at right angles to the main shaft, B1, Fig. 23. This short shaft carries also the cam, B2, which actuates the slur box movements, and by the arrangement of the rollers, levers and arms, a perfect horizontal longitudinal motion is effected on the slur boxes, guided by the slur bar on which they slide. Fig. 22 is a top elevation showing at Z the slur cock and also how the adjustment is effected.

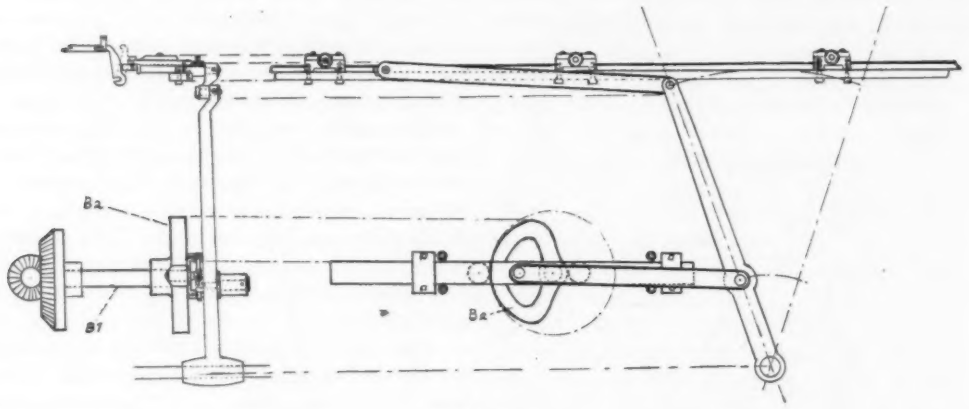


FIG. 23.

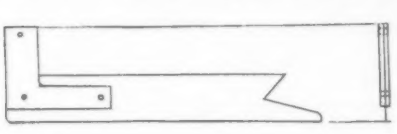


FIG. 24.

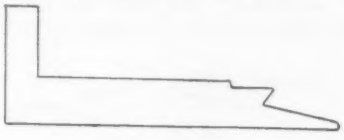


FIG. 25.

FIG. 30.

The slur cocks are generally fastened on to a slide which is set into a machined slot in the slur box at right angles to the slur bar. The dotted line represents this slide, the wheel on the screw at the end serving for the adjustment of the slur cock by drawing the slide back and forward. The plate, U, is used only to hold the slur cock in position in the slot. One of these slur cocks is required for each section, consequently on an 18 section machine we have 18 slur boxes all connected together by a rod running the entire length of the machine. The connect-

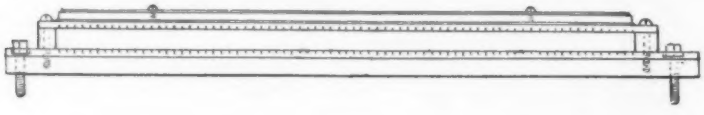


FIG. 26.

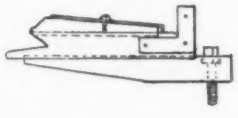


FIG. 26A.

ing rod can be seen at V, Fig. 20. On this connecting rod is fastened the bracket into which the arm giving the slur box motion is connected. An idea of this drawing or

FIG. 27.

lengthwise motion can be gained from Fig. 23.

We will now examine the method by which the sinkers are thrust forward. In the cotton machine there are two kinds of sinkers, as shown in Figs. 24 and 25, but we will first deal with those that are instrumental in drawing the loops only. These are represented in Fig. 24.

Figs. 26 and 26A show one of these sinkers in place in the sinker head before drawing the loop, and the dotted lines show its position after being thrust forward. There are two main parts, an upper and a lower plate, and these are invariably made of brass, the grooves for the sinkers being sawed to gauge. This was practically the construction of the first cotton sinker head, and there has been no radical change in this direction. The top grooved plate is screwed down to the lower one, pieces being inserted at the ends as shown at C1. The lower plate on to which all the rest of the sinker head is fastened, is screwed to the bed of the machine and is held there solid, as shown in Fig. 20.

The most popular gauge in this country has been 33, which has 22 needles per inch. It has also 22 sinkers per inch; 11, as shown at Fig. 24; and 11, Fig. 25. The grooves in the head must be cut 22 per inch in the upper and lower plates. In the heads the sinkers are inserted alternately, one of the Fig. 24 type and one of Fig. 25. They extend as far as the knitting is to be done. No knitting can be done without these sinkers, for, as previously stated, on this kind of machine the loops must be prepared before the actual operation of knitting takes place, and the sinkers are the means by which the loops are formed.

Instead of the slur cocks coming in direct contact with the sinkers in their act of forcing them forward, there is, on all plain fab-

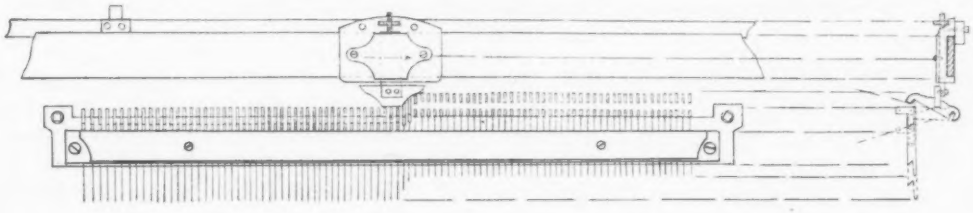


FIG. 28.

ric machines, interacting sinkers called striking jacks. As the slur cocks move sideways, they come in contact with the striking jacks, and these jacks, being in the path of the slur cocks are forced forward on the taper edge of the cock, the jacks at the same time striking the sinkers and causing their forward movement. Fig. 27 shows a striking jack, and at Fig. 20 can be seen one in its relative position to the sinkers and slur cock. The motion of the jacks is over

about 25° of a circle, backward and forward with the center at V, Fig. 29.

Fig. 28 shows a slur cock, top elevation, in the act of throwing out the sinkers. For the sake of simplicity the dividing sinkers have been omitted and only the loop drawing or jack sinkers are shown. The number of these striking jacks is 11 per inch in a 33 gauge, or one for every pair of needles. They are also made perfectly true to gauge. A great many improvements have been made in recent years in the manner in which

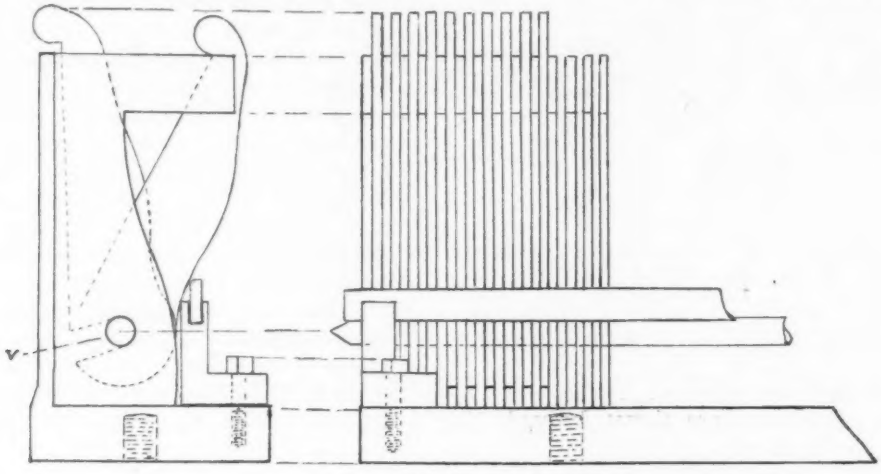


Fig. 29.

they are assembled and made into what are termed jack heads.

A jack head is a whole section of jacks built up with partitions and combs by which the jacks are held in position, and enabled to slide or make their backward and forward motion with as little side movement as possible. The action of the slur cocks on these jacks is sideways, because the jacks work at right angles to the line of motion of the slur cocks, but the gradual taper of the slur cock and the method of building up the jack heads are so perfected that very little trouble is caused by the friction of this side thrust. A general idea of the appearance of the jack heads can be gained from the end elevation and back view section at Fig. 29.

(To be continued.)

BOXES OF UNIFORM COLOR FOR KNIT GOODS.

The knit goods trade is taking quite an interest in the subject of the color of paper boxes used. At first thought it seemed of trifling importance, but it is only one of the many petty exactions on the part of jobbers and buyers which in the aggregate make all the difference in the easy and prompt delivery of goods and the smooth running of the mill. Through their Association the manufacturers will endeavor to act together in many of these matters and hope to remedy some of the uses which have crept into the trade. The buyer who is intent only on getting some distinctive color for easy identification of his special brands does not appreciate the trouble which may be caused to the manufacturer through his inability to procure from the paper warehouse supplies which are needed. This side of the question is very well set forth in a recent letter from the Charles Beck Paper Co., Ltd., of Philadelphia, Pa., who do a large business in supplying special papers for textile mills and to box makers who supply the knit goods trade. This letter cannot fail to be of interest to knit goods manufacturers as well as jobbers, and all interested in the subject are invited to present their views on this matter of special packing.

The National Association of Hosiery and Underwear Manufacturers has taken the position that this trouble may not only be remedied but corrected if the members will stand together.

MANUFACTURING HOSIERY.

BX MERRILL.

A correspondent has recently asked whether it is possible to make ladies' 176 needle hose at 65 cents a dozen so as to yield a profit to the manufacturer. The cost of manufacturing this grade of goods depends largely upon the location. It is a well known fact that Southern mills have a great advantage over their Northern competitors on the cheaper grades of hosiery owing to the cheap labor which is available in the South. Especially does this hold true in ladies' plain knit coarse and medium gauge hosiery as this grade of work requires no great amount of skill on the part of the workers. On first thought one might be led to believe that owing to the cheapness of labor and also to its being the center of the cotton growing industry the South would naturally be the most advantageous location for the manufacture of hosiery. However, such is not the case for the reason that there are certain grades of hosiery which requires skilled help for its successful manufacture, and the class of help available throughout the Southern States do not seem to be able to reach that degree of perfection which is required for the successful manufacture of high grade hosiery such as fine ribbed and full fashioned goods. For this reason we find a large majority of the Southern manufacturers confining their efforts to the manufacture of men's coarse half hose, coarse ribbed goods and ladies' plain knit seamless goods. And in this line of goods they certainly have a great advantage over the manufacturers throughout the East and Middle West. It might be possible for a Southern mill to manufacture such a hose as the sample sent me, at 65 cents per dozen, but the margin of profit would be very small. However, I do not hesitate to say that the goods cannot be manufactured in the Northern mills at a profit at 65 cents per dozen. In order to prove my assertion I am going to give the absolute cost of such a hose in our mill, and as our prices are practically the same as the prices generally paid throughout the East and Middle West I feel reasonably sure that I can show that the goods cannot be manufactured and sold at 65 cents per dozen at a profit. After carefully examining the sample sent me I find it to be made from 1/16 carded peeler yarn, and to weigh 1 1/2 pounds per dozen. We are at the present time manufacturing a similar hose and I quote below the actual cost of these goods as follows:

Yarn, 1 1/2 lbs.	$ .28
Waste, 3 oz.	.05
Knitting	.02
Cutting	.005
Turning (4 times)	.025
Looping	.04
Hemming	.015
Mending and inspecting	.02
Dyeing	.07
Forming	.03
Pressing	.015
Mating	.02
Stamping, ticketing, folding, tying, boxing	.015
Paper box	.02
Seconds	.03
Selling	.035
Superintendent and handling	.07
General or mill expense	.22
Total cost	$0.98

In the item superintending and handling is included the salaries of all the overseers and wages of all day workers throughout the mill. Also in the item general expense is included the following items of expense which must necessarily be included to obtain the exact cost of goods: Office salaries, depreciation and interest, taxes, repairs, profit and loss, insurance, discount, needles, lights, power, fuel, oil, office and general supplies, freight and express, advertising, miscellaneous items.

The general expense in our mill as based on above items figures 22 cents per dozen. Of course it is possible to reduce this expense considerably in small mills, where no high salaries are paid and where taxes are low and fuel cheap. However, if this item was to be cut in half and allowing only 11

cents per dozen as the general or mill expense (which is an extremely low figure for any mill), we still have the actual cost of goods at 87 cents per dozen.

There may also be other items of expense that might possibly be eliminated such as selling expense, stamping, boxing, etc. But even with these items eliminated it would be impossible to reduce the cost below 80 cents per dozen.

From these figures I think I have shown conclusively that this grade of goods cannot be manufactured at a profit at 65 cents per dozen either throughout the East or Middle West. However, I do not wish to say that these goods were not manufactured in the East, as certain manufacturers have been accustomed to putting goods on the market at considerably below the actual cost of same to be used as a leader or rather a bait to induce customers to buy the other numbers in their line which show a good margin of profit. They figure that the customer can be made to believe that the prices on the whole line must also be right, and in this they are undoubtedly right, to some extent at least.

There are also other advantages to be derived in putting out a leader at a very low price at times, as it also helps to keep the machinery busy during the dull season, and prevents the accumulation of a large stock of the higher priced lines, thus doing away with the possibility of being forced to close down the mill indefinitely owing to overstock. It also lessens the general mill expense on all the goods as the more machines in operation the greater the production, and the greater the production the less the general expense per dozen and vice versa. So in this case these goods may have been put on the market as a leader, or the manufacturer may be overstocked and in order to reduce his stock has cut the price accordingly.

As a matter of fact there has been a great change in the hosiery industry in the past two or three years, inasmuch as the merchant has forced the manufacturer to carry the stock instead of carrying it himself as in former years. During the dull times we have experienced during the past two years, the merchant has been very cautious in placing his orders and has resorted to ordering his goods in small lots just as he wants them and reordering when his stock runs too low. In this way he has forced the manufacturers to carry a large stock in order to take care of these immediate orders, with the result that many manufacturers have accumulated a large stock which requires a large amount of capital, and some of the less favored manufacturers have been forced to reduce their prices in order to reduce their stock, or keep from shutting down their plants indefinitely. After careful consideration I arrive at the following conclusions, viz: First, That the goods in question were manufactured in the South by cheap labor, or second, that they are being sold below cost and used as a leader, or third, the manufacturer found it necessary to move the surplus stock regardless of cost, or fourth, that the manufacturer placing them on the market does not know what the goods actually cost him and finally, that the goods cannot be manufactured under any conditions and sold at 65 cents per dozen at a profit.

KNITTING MILL NEWS.

New Mills.

Canada, Montreal. The A. G. Spalding & Bros. Mfg. Co., who operate plants at Brooklyn and Chicago, will equip after January 1 their own knitting factory in Canada. Grosser machines have been ordered. They have a sporting goods store in Montreal.

*Delaware, Wilmington. The Rising Sun Hosiery Co., organized several weeks ago, has changed its title to Rising Sun Knitting Co., as they propose later to engage in the underwear business as well as hosiery manufacturing. The plant is located in the Wawaset Building, Conrad and Jackson Sts. Winfield S. Hoffman is president; Robt. C. White, treasurer; Frank M. Sevier, vice-president; J. Frank Ball, secretary, and George A. Robinson, superintendent and buyer. The plant comprises 106 knitting and 6 sewing machines and 8 loopers, operated by electric power. They manufacture men's and women's hosiery.

Kentucky, Middlesboro. The Middlesboro Knitting Mills have been organized with capital

stock of $10,000 and A. P. Liebig president, treasurer and buyer, and G. B. Harris, superintendent. The new concern purchased the Morristown Knitting Mills of Morristown, Tennessee. They manufacture men's half hose on 16 knitting and one sewing machine, operating by steam power and using 13s white and 30s blue yarns.

*New York, New York City. Wm. E. Wright & Sons Co., previously reported to manufacture 188-needle cotton half hose, have not incorporated and will not make public information regarding this project until a charter has been secured. They are manufacturers of bias seam tape with office at 381-83 Broadway.

North Carolina, Canton. D. J. Carpenter, proprietor of the Newton Hosiery Mills, Newton, North Carolina, and associates, will organize a company with capital stock of $50,000 to build a knitting mill here.

*North Carolina, High Point. John H. Tate has not completed organization of his proposed hosiery mill company, but advises that the project will be carried to a successful conclusion.

*North Carolina, Raleigh. J. E. Matthews, superintendent of the new Acme Hosiery Mill, comes from Chapel Hill, North Carolina, where he was connected with the Lloyd Mill.

*North Carolina, Wilson. Buildings have been purchased and 100 knitting machines ordered by the Runnymere Mills No. 3. The organization of this company has been noted previously.

Pennsylvania, Bethlehem. A charter has been granted the Jewell Knitting Co. with capital stock of $10,000. A part of the old automobile factory on Conestoga St. and Prospect Ave. has been leased. Robert Pearson of South Bethlehem is connected with the company. Organizations has not been completed or officers elected.

Oklahoma, Chickasha. Buildings for the Oklahoma Cotton Mills Co., organized in July with capital stock of $150,000 to manufacture plain and fleece lined underwear, are nearly completed.

*Pennsylvania, Collegeville. M. N. Barndt and J. A. Barndt have installed 4 knitting machines and 1 sewing machine in a building and will operate under the style of the Collegeville Knitting Mills, making 200-needle women's seamless hosiery. The production will be started shortly. They intend to purchase more knitting machines and also would like information on electric power equipment, hosiery labels and trademark stamps.

Pennsylvania, Philadelphia. The Maxwellton Knitting Co., who have recently applied for a charter, will have a capital of $15,000, with Chas. T. Maxwell, president; John S. Maxwell, vice-president, and J. B. Maxwell, treasurer. The plant will contain, when suitable quarters have been secured, 16 knitters (circular machines), and 6 flat knitting machines, which will be operated on men's and women's flat underwear, cardigans, sweaters and bathing suits. They will use cotton, woolen and worsted yarns and sell the production direct. The office of the company, until a location is finally settled on, is at 2239 Delhi St.

Pennsylvania, Philadelphia. The United Mills of Oswego, recently reported by us as about to incorporate with a capital of $150,000, have now decided to change their name to the United Mills of Little Falls, N. Y., where the plant will be located and also its offices, instead of in this city. Meyer Guthron & Kahn Co., 11 W. 17th St., New York, will sell the product, which will consist of men's underwear and sweater coats, etc.

Pennsylvania, Philadelphia. The Cheltenham Knitting Co., with L. A. Dempsey as president and treasurer, and William P. Davis, vice president and manager, are arranging to start up a plant in this city for the manufacture of men's flat underwear of lisle, mercerized, combed Egyptian and combed peeler yarns. The equipment at the start will consist of 8 spring needle knitters and 12 sewing machines, which will be increased as the business advances. The office of the company, which is not incorporated, is at 111 Walnut St., where it will be located until suitable quarters are found in which to install their machinery.

*Pennsylvania, Philadelphia. Coates Bros., recently reported by us as about to start a knitting plant at Orchard and Tacony Sts., Frankford, are installing 42 knitters, 10 ribbers and 10 loopers, on which they will manufacture high grade seamless half hose of cotton, silk, mercerized and lisle yarns. They will finish their production and sell it direct.

*Pennsylvania, Philadelphia. The Peerless Silk Knitting Co. are installing their machinery, as previously reported by us, in the new mill building at Jasper and Willard Sts. The company has a capital of $10,000; Richard Voit, president, and George T. Hunsicker, treasurer. They will make women's full fashioned silk hosiery, the plant to contain 8 full fashion machines, 4 of which are now being set up and are expected to be in operation within a few days. The production will be sold direct.

Pennsylvania, Philadelphia. H. A. Romberger, president and treasurer of the H. A. Romberger Manufacturing Co., manufacturers of men's seamless half hose and women's seamless cotton hosiery, with plants in Middletown and Newport, Pa., reports that he is about to start up a new plant, presumably in this city, in which he will install in the neighborhood of 70 knitters, 40 of which have already been ordered. The new plant will be run on the same grade of goods which he is now turning out. The main office of the company is at 336, 338 and 340 Bourse Building.

Pennsylvania, Philadelphia. Parker & Allen Hosiery Co. have leased a portion of the building at 2058 E. Sargent St., in which they are installing 20 knitters, 3 loopers and 1 sewing machine for the manufacture of 216-needle cotton and mercerized women's hosiery, which they will sell direct and through New York agents.

Pennsylvania, Philadelphia. Richard Meyer has installed 50 knitters in the building at 5th, Luzerne and Lawrence Sts., which he is operating under the name of the Boulevard Knitting Mills, on 188 and 200-needle hosiery, selling the production through New York.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Exhaust Fan. The Buffalo Forge Co., Buffalo, N. Y., have brought out an improved slow speed exhaust fan which is described in another part of this issue.

Skein Winder. Jacob K. Altemus, 2824 N. 4th St., Philadelphia, Pa. An improved skein winder for woolen, worsted or cotton yarn. It is described in this issue.

Spool Truck. The Geo. P. Clark Co., Windsor Locks, Conn. An improved spool truck which is described in this issue.

New Rotary Press. L. H. A. Schwartz & Co., 53 State St., Boston, Mass., are introducing to the American market a new imported rotary press which has met with great favor in Europe and which is claimed to have advantages in the way of great production and superior and even luster. The press has been installed in some mills in this country where its merits can be investigated.

Crank Head for Looms. The Diamond Lubricating Co., Manchester, England. An improved self-lubricating crank head. It is stated that the lubricating material need be replenished only once in three or four months.

Hank Drying Machine. Vincent Roberts & Marr, Leeds, England. An improved drying machine for skein yarn which it is stated is capable of a large production and leaves the material in good condition.

Squeezing Machine. James Bailey, Huddersfield, England. An improved squeezing machine for extracting water from piece goods during finishing.

Conditioning Oven. Ellis & Allsop, Bradford, England. A conditioning oven heated by an electric current. Owing to the arrangement of the heater or economizer it is stated that the cost of heating does not exceed the cost of gas or steam, while much better results are obtained.

Shuttle Changer. G. Blumer & Co., Bergamo, Italy. An automatic device for changing the shuttle during weaving.

Ring Frame for Carded Woolen Yarn. The Saechsische Maschinenfabrik, Chemnitz, Germany. A ring frame for spinning carded woolen yarn which, it is stated, embodies important improvements over machines of this type.

Dobby Motion. Peter Walker, Burnside Works, Weir St., Blackburn, England. An improved dobby head motion which has been installed in a number of English mills.

Balling Machine. Prince Smith & Son, Keighley, England. An improved balling machine for preparing balls supplied to the Noble comb. It embodies a number of improvements over former types.

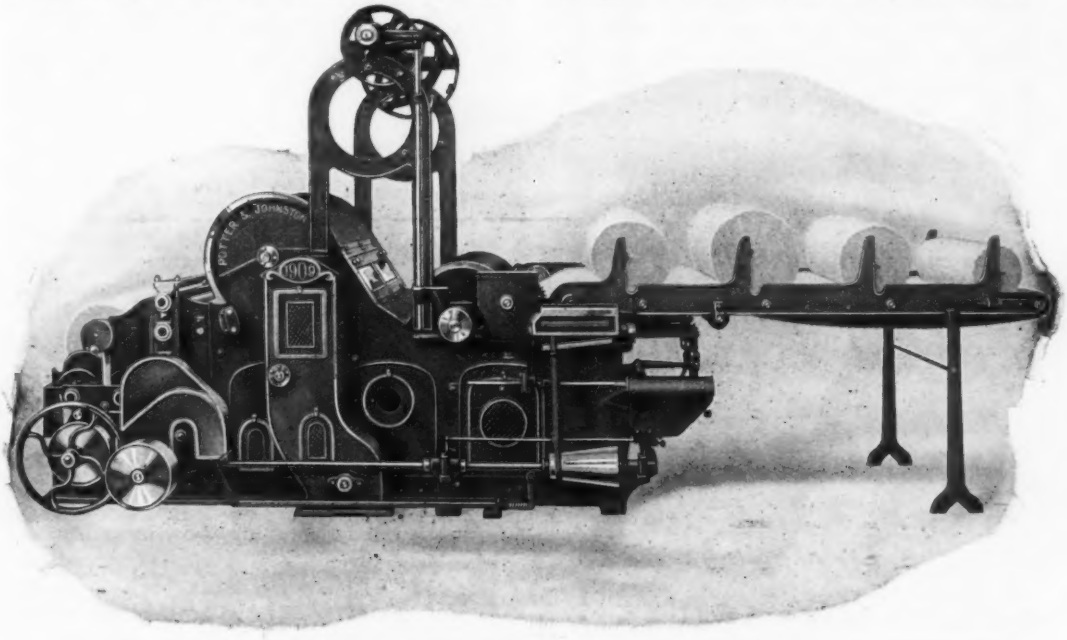
"Mellowing" Machine. Whitehead & Poole, Milltown Engineering Works, Radcliffe, Lancashire, England. A machine for softening or breaking down cloth that has been over-calendered or over-finished in order to give the fabric a softer handle. A series of right and left-handed scrolls are set around a revolving cylinder, the machine thus resembling an ordinary cloth napper.

Self-Lubricating Weight Hook. L. Paechtner & Co., Cheapside, London, E. C., England. A weight hook for the draft rollers of spinning and preparing machines. It is constructed so as to be self lubricating.

Dust Remover. Herbert Smethurst & Co., Oldham, England. An improved apparatus for removing dust from card rooms.

A NEW SINGLE BEATER FINISHER PICKER.

The illustration shows the new single beater finisher picker, built by the Potter & Johnston Machine Co., Pawtucket, R. I., who have in the past decade gained an enviable reputation throughout the world for the high quality of their machine tools. Cotton manufacturers will remember that Mr. Potter has had long experience in building cotton machinery and will give interested attention to the new types the company is putting on the market.



THE POTTER & JOHNSTON SINGLE BEATER FINISHER PICKER.

This finisher picker is made with the same tools and process, and with the same care and precision as enter into their machine tool work. The beater and fan shaft are ground, all studs are case hardened and ground. The high speed gearing is all cut, and fast running pinions are made of steel, cut and case hardened. All medium and high speed bearings are ring oiling, the beater and fan bearings having been designed to overcome the trouble of oil leakage, which every carder knows causes serious annoyance by getting inside of the machine and on the cotton, to say nothing of the cost of the oil. These bearings are oil tight and neither allow oil to be drawn inside of machine or to leak outside.

The evener mechanism is so constructed that friction has been almost eliminated, and as a result, the slightest change in thickness of laps is at once recorded by the evener belt. This is claimed to ensure an evenness of the finished lap, heretofore considered impossible.

Combined with the countershaft shipper handle is a locking device for the beater bonnet. This device locks the bonnet on starting, or if the bonnet is open, the shipper is locked so that the machine cannot be started. An improved form of grid bar is used, the angle bars having milled knife edges, true and parallel to the edge of beater blade. The flat dust bars are made of sheet steel, and owing to their thinness it is possible to use over double the usual number and still keep the same spacing. As a result

the cotton is cleansed much more thoroughly.

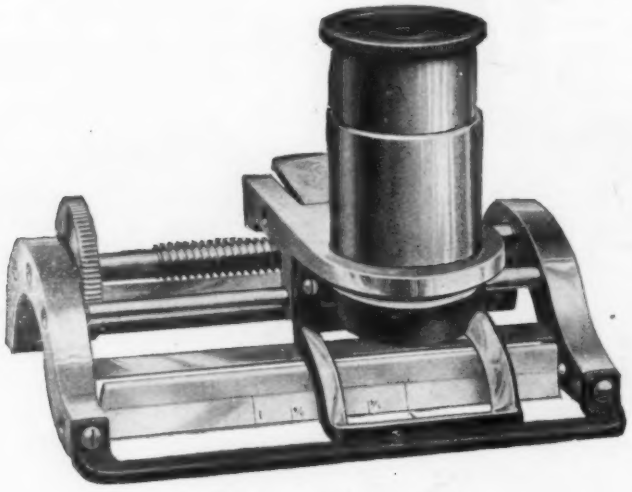
Between the cage stripping rolls and the lap head, the builders have applied their patented "anti-split rolls," which prevent split laps. There are two of these rolls. The lower one is composed of a series of steel discs on a shaft, which run in corresponding grooves in the upper roll. The cotton passing between them and the lap is thus corrugated lengthwise with small ribs which are pressed down by the calender rolls into re-enforced strips, which bind the sheet together.

The brake motion for the lap racks is adjusted by set screws for any desired friction, and change in same can be very quickly accomplished.

Everything about the machine looks substantial and none of its refinements appear to have been attained by the sacrifice of strength or ample wearing surface. The quality of the workmanship throughout is well illustrated by the fact that when running, either idle or operating on cotton, one can hardly tell from the sense of hearing if gears have any place in its construction. The general appearance is such as to commend it to those who like nice lines and finish in the machinery in their mills. The builders state they guarantee the picker will do better cleaning and evening with less cost for power, oil and repairs than any other machine.

THE TRIPLEX THREAD COUNTER.

This instrument offers great advantages in the counting of threads in fabrics over the ordinary thread counters which have been so long in use. The lens is moved by turning the knob, shown in the illustration, and at the same time the operator looking through the lens counts the threads that come in sight. The distance covered is accurately indicated by a pointer on a graduated scale. The screw has a fine double thread which holds the glass firmly in place preventing all vibration.



THE TRIPLEX THREAD COUNTER.

When the count is completed the lens and pointer can be easily shoved back to the place of beginning by pressing the lever and without turning the screw. The instrument is equipped with five scales, based respectively on the inch divided into halves, quarters and eighths, the inch divided into tenths, the linen measure, the old French inch divided into twelfths (lignes) and the French millimeter. These scales are on a

revolving bar so that the operator can turn up any one required.

There are three mirrors attached to the barrel of the lens and so arranged that they can be adjusted to throw the light on the cloth. A needle attached to the barrel of the lens serves as a guide in counting the threads. The needle is so arranged that it comes to the scale, but does not lap over it and hide the divisions. Another important improvement consists in placing the knob of the screw inside the frame, thus increasing the stability of the instrument and making it unnecessary to hold it in place while examining the cloth. This counter is used extensively in the textile trade in Europe and this country and has been adopted by the New York custom house for the examination of imported fabrics. It is also used in the Quartermaster's Department at Philadelphia in examining the goods purchased by the Government. Further information can be obtained on application to the sole American Agent, Charles Lowinson, 395 Broadway, New York City.

THE FRANKLIN DYEING MACHINE.

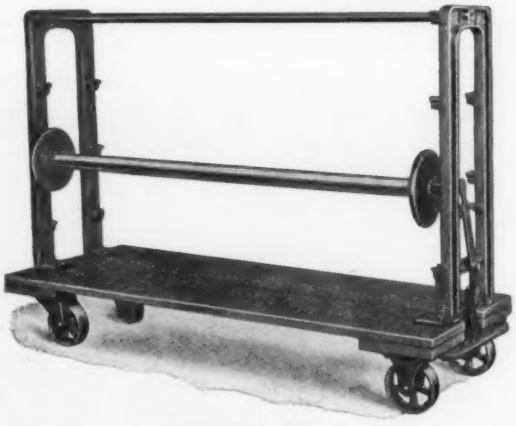
In our October number we gave a description of the new dyeing machine which is being built by the Franklin Process Company of Providence, R. I. This article has been commented upon very favorably.

The idea which is worked out in this system of dyeing appeals to manufacturers on account of the great savings made in winding charges. At the same time it is claimed by the manufacturers that yarns dyed on this system work better in weaving and knitting because the yarns are practically crabbed and finished before they are woven or knit. This applies particularly to worsted, wool and shoddy yarns.

The Franklin Process Company advise us that they have an experimental plant in Providence, where sample lots of yarn can be dyed to demonstrate the advantages of their system. They state that they would be pleased to have anyone who is interested take advantage of their experimental plant and have sample lots dyed for testing in regular manufacturing operations.

A NEW MODEL SPOOL TRUCK.

The new spool truck built by the George P. Clark Co., Windsor Locks, Conn., is shown in the accompanying illustration. It has been designed for use in large mills and a special feature is the device shown at the end of the truck. By pulling a crank or lever the casters are made to run at differ-



A NEW SPOOL TRUCK.

ent angles. In the position shown in the iliustration, the wheels allow the truck to move backward or forward only. By moving the lever and changing the angle of the wheels the truck can be made to move in any desired direction. The casters at the other end of the machine are of the swivel type and thus conform automatically to the direction taken by the guiding casters at the lever end of the truck.

This truck will be found very useful where the elevator is not deep enough to admit a long truck, and it can be used to advantage in many different places in textile mills, as the special guiding device enables it to be moved in very close quarters. The end racks are of solid cast iron with the lugs to receive the spindle end of the spools cast into the frame. This truck can be made of any desired length mounted upon either iron or rubber wheels.

The value of raw cotton imported into Japan during the first three months of 1908 was $18,249,446, against $18,312,576 during the same period last year.

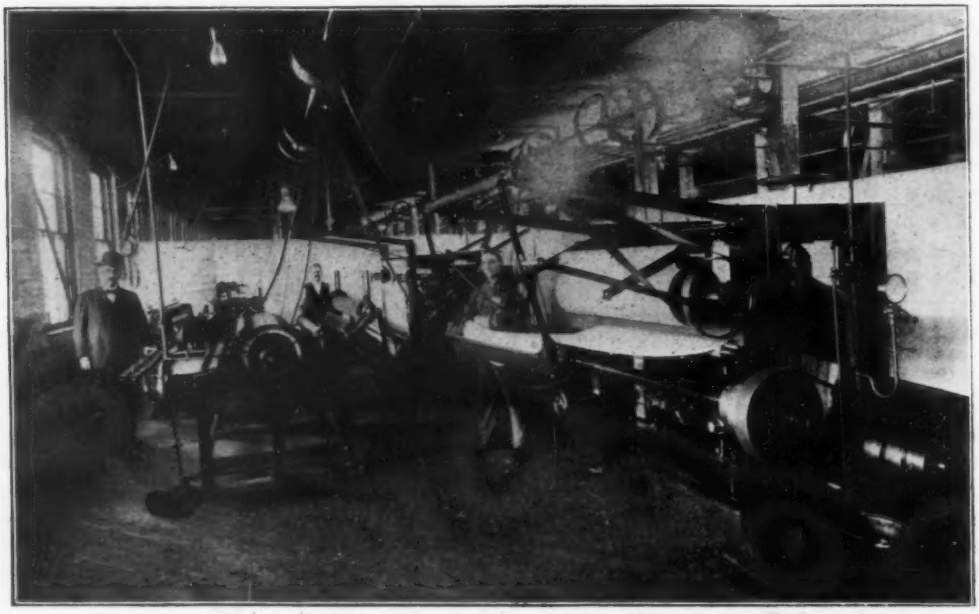
A DEMONSTRATING MACHINERY EXHIBIT.

Builders of textile machinery, especially new machines which are not yet in extended use, are frequently confronted by the difficulty of showing a prospective customer a machine near at hand in actual use. A man who is buying an expensive machine usually wants to see how it works and although the builder is prepared to guarantee results and take the risk of a try-out in the customer's own works, even then an order comes easier if the buyer can see the machine. It is not always easy to show him one that is operating in a competitor's mill, even if it is near enough to do so conveniently.

It is to overcome this objection that Messrs. Schuchardt & Schutte, importers and dealers in woolen, worsted and silk finishing machinery, whose office is at 90 West St., New York, have opened a practical demonstrating exhibit on the second floor of the Manhattan Print Works, South St., Passaic, N. J., of which views are shown herewith. At the present time they have in operation the following machines, a number of which have been described in detail in these columns:

S & S No. 5 Teasel Gig for vegetable teasels with three contacts and automatic teasel cleaner.

S & S No. 12 Pneumatic Extractor, the goods running over a slotted cylinder in full width.



SCHUCHARDT & SCHUTTE'S MACHINERY DEMONSTRATING EXHIBIT.

S & S No. 13 Grinding and Polishing Machine, saving burling and shearing.

S & S No. 17 Mossing Machine for softening worsteds.

S & S No. 19 Combined Steamer, and wet and damp steam dry finishing machine (Decatizing), for steaming, sponging, shrinking, washing, scouring, cooling, lustering, etc., of piece dyes or mixed goods.

S & S No. 28 Lacquering and Lustering Machine for producing a very high finish.

S & S No. 32 Brushing Machine with steaming table, etc., making the cloth ready for the tailor.

S & S No. E Stenciling machine with all latest improvements.

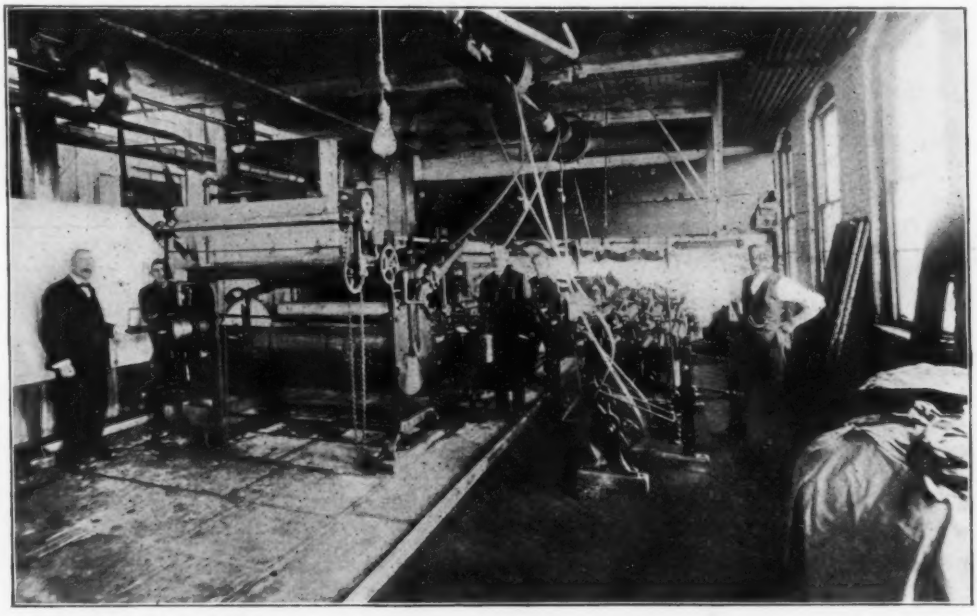
S & S No. R Platen Press, doing the work of the hydraulic press and having a large output.

The exhibition is in charge of Mr. C. M. Hoffschmidt, the well known textile machinery expert of this firm, while the machines are demonstrated by Mr. G. Baensch who is a practical finisher. This novel and unusual demonstration should interest manufacturers of woolens and worsteds, for they can conveniently see samples of work done and have a practical demonstration of the various types of machines on their own goods if desired.

The largest item of export to the United States from Nassau, Bahama Islands, for the year ended June 30, 1909, was sisal fiber, its value being $212,284.

THE HORIZONTAL CELL DRIER.

A new type of the horizontal cell drier, as shown in the accompanying illustration, is being built by the Cell Drier Machine Co., Taunton, Mass. It is in many respects a departure from the vertical type previously built. It is built on the unit system and can be enlarged by simply piling on additional cells whenever a greater capacity is required. The machine has no frame; each cell has but three points of support, hence there is no undue strain, thus avoiding the danger of steam leaks; one side and the two ends of the machine are entirely free from obstruction. This permits an easy, rapid threading up, and a constant oversight for bad seams or rips.



ANOTHER VIEW OF THE MACHINERY DEMONSTRATING EXHIBIT.

The cells have a gravity system of circulation for removing the condensation, which eliminates scoops, buckets, siphons, stuffing boxes and air valves, together with all the expense and annoyance attending the drying cylinders. They are non-collapsible and will require no repairs. The carrier rolls are

made of seamless drawn brass tubing. They can be easily and quickly replaced by scroll rolls, spreaders, expanders, brushes, or any other contrivance put on to hold out to width. The drive is a single chain, requiring very little power and doing away with noisy, breakable gears.

The cell drier is simple, compact and economical in steam, and the builders claim that it requires less labor and occupies but a fraction of the floor space required for cylinders. Compared with cylinders whose speed is limited by their centrifugal limitations for ejecting the condensed steam, the advantages, from the standpoint of output, as well as from those noted, are claimed to be in favor of the cell driers.

THE HORIZONTAL CELL DRIER.

The exports from Chemnitz to the United States for the six months ended June 30, 1909, were as follows: Hosiery—cotton, $3,938,010; silk, $51,304; wool, $10,890. Gloves—cotton, $598,713; silk, $31,145; wool, $27,605. Machinery, underwear and upholstering goods, $247,823; all other articles, $1,657,325; total exports, $6,562,815.

BUFFALO SLOW SPEED EXHAUST FAN.

The illustration shows the Buffalo slow speed low power exhaust fan, built by the Buffalo Forge Co., Buffalo, N. Y., and which has been designed and built to meet the requirements of small consumption of power and reduced wear and tear. It is claimed that this exhaust fan when run at 20 per cent, less speed than the standard exhauster of the same size will do equal work at least 10 per cent. reduction in the consumption of power. In addition to the power saving, the lower speed results in decreased wear and tear, particularly on the bearings and also minimizes the vibration and belt troubles.

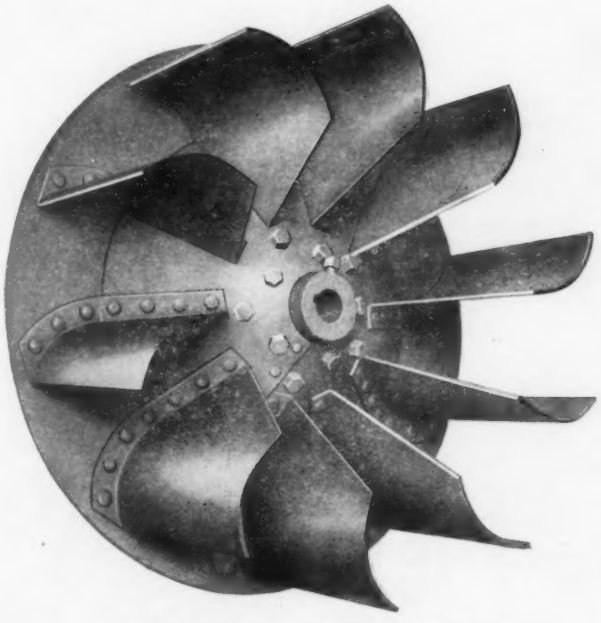
The blast wheel is built of heavy steel plate. Instead of the spider usually used to support the vanes or blades, a heavy steel plate cone is used. The apex being at the inlet, the material entering the fan strikes the cone and its direction gradually changed without that loss of momentum due to sudden changes in direction. This cone being perfectly smooth offers no obstruction to the free passage of the material, so there is no chance of clogging.

The forward curved vanes are securely riveted to this cone and also to a heavy steel plate flange at the back or side opposite the inlet, insuring strength and rigidity. Another feature is the extension of this flange beyond the tip of the vanes. This prevents any material thrown from the vanes coming in contact with a dead surface, like the side of the housing and its progress retarded. Instead, it is thrown against this flange revolving at the same speed, its momentum is maintained and the material thrown clear into the outlet.

The fan is overhung on a shaft of hardened steel, running in long journal bearings of the double ring oiling type. These bearings are the result of successful experience for over thirty years. They operate smoothly with little attention save an occasional oiling. The bearings are supported upon a heavy cast iron pedestal in such a manner that the alignment of the fan is constantly maintained. The housing is adjustable to either hand or any angle of discharge. All the necessary adjustments are made in a few moments and on the outside of the housing.

To change the direction of discharge the bolts in the ring of each pedestal are loosened, then the housing is revolved until the discharge points in the desired direction.

To change the hand, these bolts are removed, the set screw holding the fan to the shaft is loosened, and then the pedestals are shifted. This operation is completed in a few minutes. Crossed belts are unnecessary. Sharp angles are completely avoided. The housing is built of heavy steel plate, securely bolted to a steel frame. The smoothness of this material offers little if any resistance to the air movement, and friction is reduced to a minimum. This fan is successfully used for conveying cotton, wool and other textiles, and for many other pneumatic conveyance purposes. Still another use is the removal of gases, acid fumes, smoke and gases generated by forge and furnace fires.



THE BUFFALO SLOW SPEED EXHAUST FAN.

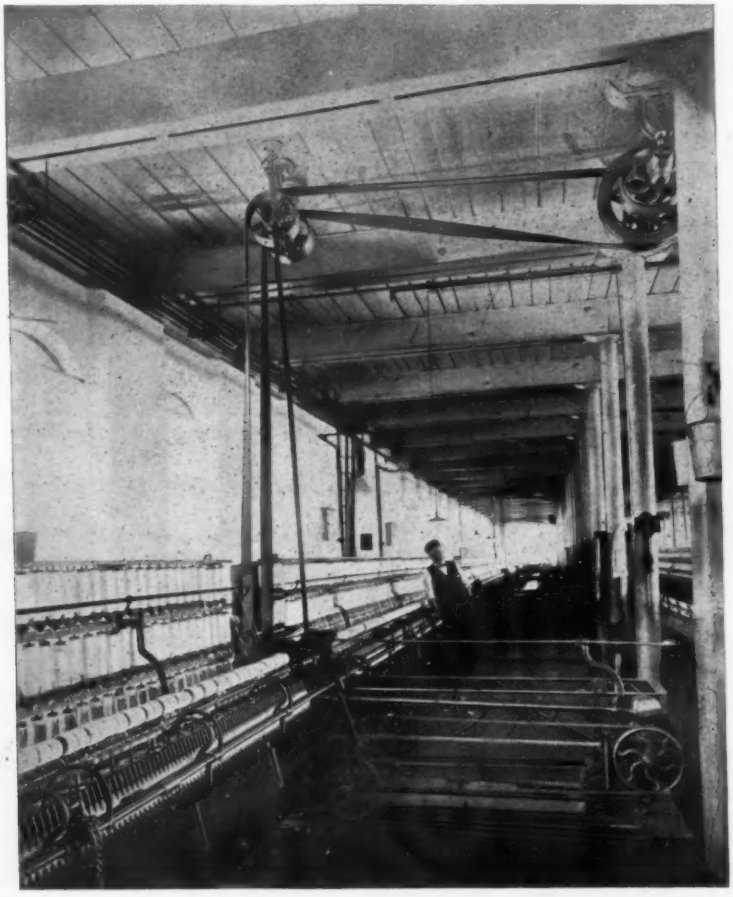
This exhauster is built by the Buffalo Forge Company, Buffalo, N. Y.

BELTING FOR TEXTILE MILLS.

SHOWING WHAT TYPES OF BELTING ARE BEST ADAPTED FOR VARIOUS TYPES OF TEXTILE MILL WORK MACHINERY.

About the first of the present year it was estimated that $60,000,000 would be spent during the year 1909 for new textile mills and improvements to old ones. The belting equipment for these new mills is no small item of expense. One textile mill at Cohoes, N. Y., is credited with having in daily use thirteen miles of belting. The problem of economically equipping various machines in a textile mill with belting is therefore one that should receive most careful attention, not only on the part of the engineer, superintendent and purchasing agent of the mill, but on the part of the owners themselves.

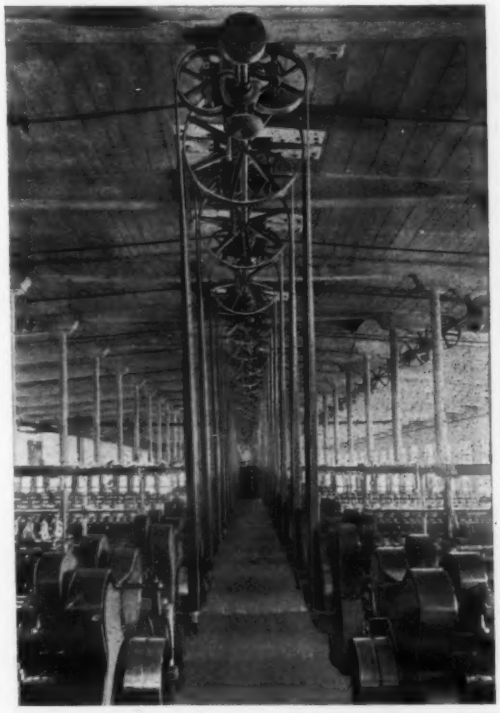
The engineering department of the New York Leather Belting Company, 51 Beekman St., New York, has been making a study of belt conditions in connection with textile mills, with a view to finding what types of belting are most economically adapted to different types of machinery found in textile mills. We are indebted to this company for the information contained in this article.



SHOWING PECULIARLY BELTED MULE DRIVES IN THE BARKER MILL AT AUBURN, ME.

In a regular cotton spinning mill, its tests

have shown leather belting to be best adapted for general work. The average cotton spinning mill has main drive belts of heavy triple ply leather. These are usually operated direct from the engine to the first, second and third floors, or rebelted by means of countershafts; they are usually required to transmit from 250 to 500 h. p. In some mills direct connected apparatus



SHOWING MULE DRIVES IN THE SAGAMORE MILL AT FALL RIVER, MASS.

has been installed which eliminate wide triple belts, and which bring into use 8, 10 and 12 inch double motor belts which drive the machines in groups. For main drive belts it is essential that the very best center stock belting be used. A well-made, best quality center stock leather belt used as a main drive belt should last for years.

A 22 inch double leather belt was installed in 1876 by the New York Leather Belting Co. at the Union Mills in Brooklyn, to operate a main drive where it was called upon to transmit 100 h. p. The same belt is still operating, apparently in as good condition today as it was when installed thirty-three years ago. This is an example of the life of a first-class main drive leather belt which is built of the right material in the first place.

The fan pump or centrifugal pump found in most textile mills is not most economically belted with leather belting. The damp conditions under which this belt operates would make it appear that a waterproofed leather belt should do this work properly. The New York Leather Belting Company has made a series of tests, however, in connection with fan pumps, not only in textile mills but in paper and pulp mills, with the result that it has demonstrated to its satisfaction that a special type of belting it manufactures, known as Victor-Balata belting, will outlast and outdrive any leather belt. This is an interesting and strong statement made by them, and will bear investigation by textile mill superintendents.

Perhaps the most difficult drive in a textile mill, and the one which causes the greatest amount of trouble, replacements, and taking up, is the spinning frame belt. These belts average in width from 2 1/2 to 3 inches; they are hard-worked belts; must run at very high speeds and work at difficult quarter turns. The newer types of spinning frames are larger, and even harder on belts than the older types, since they have an increased speed and a heavier load to carry. The best belt for this kind of a drive they find to be a first-class single ply leather belt. The average single ply leather belt, however, will not answer the purpose. To get a single ply leather belt which will have the proper strength as well as pliability, the New York Leather Belting Company has adopted these specifications in the building of a belt, which is known as "Phoenix:"

SPECIFICATIONS.

1. Belts cut from No. 1 heavy butts.

2. Only leather tanned by the oak-bark, long-time process used.

3. Only 15 inches on either side of the backbone of the hide used.

4. Four feet from tail towards shoulder alone is used.

5. Every strip for each width of belting cut from some one fixed location in the hide.

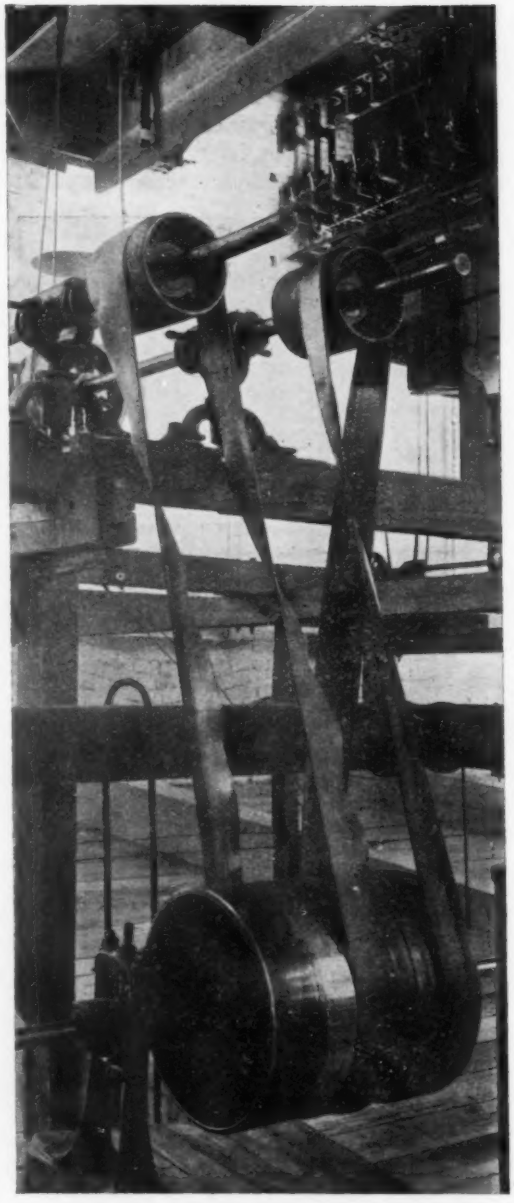
6. The 8 inch backbone section of leather is stretched separately from the leather on either side.

The belt itself will have a weight of about 17 ounces. The illustration shows clearly the peculiar method followed by the New York Leather Belting Co. in cutting its belting into strips so that each strip for any given width of belting will be absolutely uniform in weight, strength and thickness.

The cards found in spinning mills require one or two 12 to 24 inch double or triple leather belts to drive them. Then, of course, there are numerous 6 and 8 inch double belts which run to the countershafts. Directly connecting with the cards single belts are used in from 2 1/2 to 3 1/2 inch widths. As much care should be taken in the selection of these belts, to insure a single belt of absolute first quality, as is followed in the selection of the single belts for use on the spinning frame. These single belts which connect directly with the cards must undergo a hard drag and grind every moment the mill is in operation.

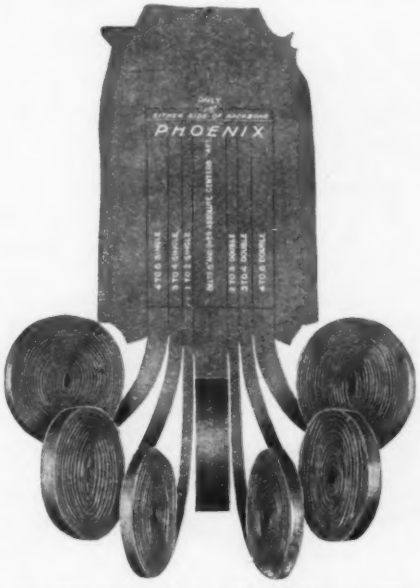
The loom belts usually work on an automatic basis, i. e., every time the filling breaks the belt is shifted automatically and the machine stops, and the belt continues running with no load on an idler. This necessitates the use of a good leather belt, since most textile belts do not operate successfully in connection with idlers. Loom belts are usually 2 to 3 inches in width, run at slow speeds, and have to be of the best quality leather, and of a weight from 15 to 16 ounces to the square foot.

Cone belts in the average textile mill cause a lot of trouble, since they must be made endless to get a continuous and even transmission; they must not stretch, and must stand great strain; they are constantly sliding automatically along the cone, which, of course, exhausts the frictioning quality of the belt unless the leather is very thoroughly curried. The widths of these belts range



A BELLY STOCK BELT NOT ADAPTED FOR BELTING PURPOSES. NOTE THE WOBBLY EDGES.

from 1 1/4 to 2 1/2 inches. The New York Leather Belting Company has been making some experiments in connection with this drive, and as a result they recommend a properly applied laminated belt for this work. This is a leather belt made up of strips of leather cut from a hide and set up on end, the strips sewn together. This belt has the greatest frictioning quality of any belt they have ever tested. Its manufacturers are still experimenting largely with this belt, and it has not been placed on the market for general use up to the present time.



SHOWING HOW EACH WIDTH OF BELT IS TAKEN FROM SAME LOCATION IN THE HIDE TO ASSURE ABSOLUTE UNIFORMITY.

An illustration from a photograph taken recently in the Barker Mill at Auburn, Me., shows "Phoenix" belting (specifications of which were given above) operating mule drives. The main drive belts operate at 255 revolutions per minute, rim shaft 563 revolutions, countershaft 415 revolutions, and spindle 6,000 revolutions; the driving pulley on the countershaft is 19 inches, and the driven pulley of the rim shaft is 14 inches. The idlers which receive the quarter turn are 13 1/2 inches. The belt which operates under these difficult conditions is a 3 1/2 inch extra heavy double leather belt. The belt is 43 feet in length, and it has been operating in this drive without takeup or shifting for two years. This kind of a drive, while not of the very latest type, is found in large numbers in the textile mills throughout the country.

We also show photograph of some regularly constructed "Phoenix" belting which has been operating mule drives successfully for a long time in the spinning room of the Sagamore Mill at Fall River, Mass.

Certain tests which have recently been made in connection with bleacheries and dye houses with a special type of belting which is built to withstand the action of water, starches and acid fumes, will soon be made public.

STRETCHING CLOTH.

Sometimes the inventor of a machine or device does not at first appreciate the full range of its possibilities, although as a rule inventors are not inclined to be over modest. It frequently happens, however, that the buyer of the machine put it to a different use from what it was originally designed, as for example, the familiar story of the man who exported warming pans to the West Indies and reaped an unexpected harvest from their use for skimming molasses.

The so-called "bristle" cloth stretcher which was originally invented to stretch cotton cloth on the drying cans to get its full width, has been found very useful in other processes, for instance, in finishing silk, narrow fabrics, and ribbons, in connection with rubber cloth manufacture where cotton cloth must be stretched smooth and to its full width before the rubber coating is applied and one of its recent applications is in opening up woolen goods before napping.

The principle of stretching cloth from the center toward the selvage evenly, smoothly and without undue strain at any given point, has opened up possibilities for stretchers or expanders far beyond the range of the tenter frame system operating on the prin-

ciple of stretching cloth by pulling it out by the selvage. The new principle is so simple and yet so efficient that it has solved some of the most difficult problems, giving the required width to fabrics that had never been successfully handled by the tenter.

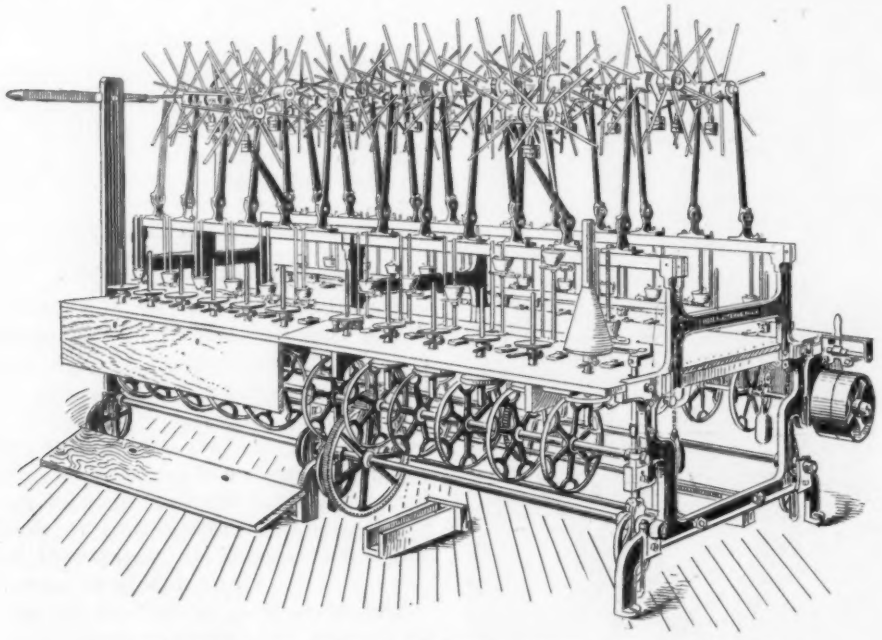
Its adoption has been general, both in England and America, and valuable suggestions have come from users of the stretchers who were struggling with difficulties unknown to the machine builders and who recognized in the new idea a solution of their troubles.

Contrary to a natural first impression, there is no brushing effect in the operation of the bristle stretcher, although it is composed of sections of brushes. This is shown by the fact that starched or sized goods are successfully stretched by this process, and the action of the bristles is such that they do not pick up the starch or sizing. They simply push or slide the cloth from the center tc each side, smoothing and stretching it to the desired width.

By placing the stretcher at the point on the dry cans for cotton cloth where the goods are beginning to "set," it is found that whatever stretch is given at this point will be permanent as the cloth does not shrink after it has once dried.

A NEW SKEIN WINDER FOR WOOLEN, WORSTED AND COTTON YARNS.

Jacob K. Altemus, 2824 No. 4th St., Philadelphia, has perfected and is just putting on the market the latest improvement in the way of skein winding wool, worsted or cotton yarn. An important feature of this machine is the fact that the pin swifts carry the yarn and have a stationary axle with an arm which leans forward to facilitate placing the skein on the swift. The convenience of these features will be appreciated by the practical man.



NEW ALTEMUS SKEIN WINDER FOR WOOLEN, WORSTED AND COTTON YARNS.

Other improvements have greatly increased the speed and production of this system of winding and at the same time give a hard wound perfect bobbin, taking a maximum quantity of yarn. The winder is built either single or double with varying number of spindles according to the requirements.

It has a variable speed motion to keep uniform yarn tension and permit overrun of skeins.

Mr. Altemus has been a specialist for years on the subject of winding machinery and in bringing out a new machine knows the requirements of the trade and also the requirements of a new machine which shall be an advance over what has gone before and feels that his new winder fulfills these requirements.

ARTIFICIAL LACE.

A French method of manufacturing artificial lace has recently been patented in the United States. It is designed for producing imitations of bobbinet, gauze, muslin, lace, embroidery, etc., by means of collodion such as is used for manufacturing artificial silk, or of any other viscous or pasty matter adapted to be moulded into the shape of filament and to acquire a sufficient consistency when dry.

The process of manufacture is carried out in the following manner. The pattern to be reproduced is engraved on a cylinder of metal, ebonite, glass or other polished material, the grooves being equal in width and depth to the filaments of which the pattern is composed; the engraving represents the design to be reproduced. The recesses in the cylinder are then filled with the substance of which the fabric is to consist. This may be effected by methods similar to those used for inking printing blocks for reproducing copper engravings.

While on the cylinder this substance is treated with a hardening agent, the nature of which varies according to the substance itself. Then the substance is detached in the form of a fabric, which may be directly used or may be subjected to further treatment, for example for separating nitrogen, if the substance used is collodion, or for saturating or completing the solidification thereof in the case of other substances. The substances employed may be the different collodions, and a solution of cellulose niter in ether and in alcohol. The coagulating agents are those employed in the manufacture of artificial silk, for example methyl alcohol.

The annexed drawing illustrates by means of an example the principle of the invention.

Fig. 1 shows a sectional view of an apparatus; Figs. 2 and 3 show the resulting pattern, the latter being provided with a design.

The engraved cylinder, a, Fig. 1, revolves about a horizontal axis in the direction indicated by the arrow. Above the cylinder is placed a funnel, b, from which the viscous substance flows to the engraved surface, on which it forms a thin layer. A strickle, c, removes from the surface all the substance in excess of that which is required to fill the grooves. The substance in the grooves is immediately subjected to the action of a liquid hardening agent supplied through a tube, d, and projected in the form of jets or spray on to the cylinder, a. These liquids, which accompany the cylinder, accumulate in a trough, e, into which the cylinder, a, dips to a slight extent, and from which the liquid overflows through a pipe, f.

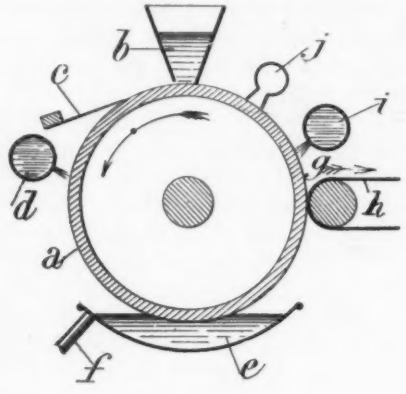


FIG. 1.

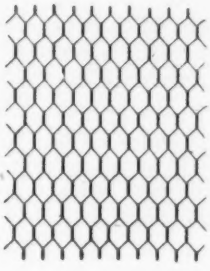


FIG. 2.

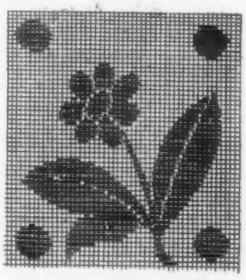


FIG. 3.

Dyeing, Bleaching, Printing, Etc.

IRREGULARITIES IN DYEING WOOL.

BY LOUIS J. MATOS.

One of the most common complaints from the use of the so-called alizarine colors—those water soluble dyestuffs which owe their remarkable fastness towards light, milling, etc., to the use of chrome before, during, or after the actual dyeing—is the presence of streaks, clouds, or both. The cause of this defect is variously attributed, but as a general rule the chief cause is traced directly to the dyer entering the pieces to be dyed into the bath already heated to too high a temperature.

The proper temperature at which to commence dyeing should be about 110° to 120° F., for colors applied upon a chrome bottom or for colors that are subjected to an after-chroming. For chromate colors, or colors dyed with bichromate of potash in the dye bath, the temperature should not exceed 160° F. at the commencement of dyeing.

In dyeing woolen goods with dyestuffs that permit the simultaneous use of chrome in the dye bath, it should be observed that in charging the bath the dyes should be previously dissolved with hot water, then added to the bath, and after boiling up and cooling off by the addition of cold water, the proper quantity of dissolved bichrome is then added. The chrome and color should never be brought together in a small volume of water at the boiling temperature, as there will be a considerable loss of color.

Another cause for uneven results is to be frequently traced to a too sudden elevation of temperature after the goods have been entered, which causes the color in the bath to "jump-on" with the result that the exposed portions of the cloth takes up more color than the portions that are protected by folds.

In bringing to shade it is necessary to add additional quantities of color to the dye bath, but it must be recognized that there are not many dyestuffs that can be so used in baths, heated to, or near the boil, for the reasons above indicated. It is always best to cool off the bath before shading.

Partial or imperfect scouring of the cloth is directly responsible for more off-shades than any other cause, and yet hundreds of dyers who know this fact as well as the writer, who take chances on allowing a batch of pieces to go through once in a while, in the hopes that any defect in shade may escape observation. Imperfect scouring means one of two things, either the original dirt, oil, or grease remains in the material, or some of the scouring soap has not been completely washed out. In either case the final results are about the same. The oils not removed from the cloth act as a resist to the mordant, or to the proper taking up of the color; or, if traces of soap remain, they are decomposed, setting free the fatty acids which deposit upon the wool and resist the equal absorption of the mordants and coloring matters, at the same time causing a serious loss of dyestuff during the subsequent washing or milling.

Another cause of unevenness which should be given more attention than is customary is the entering of the dry or unevenly dried cloth into the mordanting or dye bath, the result being that too much mordant or color is taken up in those portions not thoroughly wet out before immersion. Still another cause for uneven dyeings is the employment of too small a volume of dye liquor in proportion to the weight of material to be dyed. In dyeing woolen piece goods, it is necessary that the volume of dye bath should be sufficiently large to permit thorough handling, at the same time keeping the entire bath completely immersed.

SKEIN DYEING.

The dyeing of skeins also has its share of troubles. The most frequent cause of unevenness is due to the attempt to dye more yarn than the kettle will conveniently accommodate, or too much yarn to permit proper handling by two men.

It cannot be expected in dyeing alizarines or allied colors which require regular turning during the gradual increase of temperature to the boil, to secure level shades unless the amount of yarn is at all times within easy control of the kettle hand. It is a mistake to expect the best results under such conditions.

In yarn dyeing the temperature of the dye bath should always be under control, and the bath brought very slowly to the boil. So-called "mottled shades" must frequently result when it is attempted to shade with the bath at too high a temperature. Shading with chrome mordant colors should always be done by lifting the yarn from the kettle, running off about one-quarter of the liquor, adding the necessary shading dyes, previously dissolved, filling up with cold water, re-entering the yarn and turning to shade while the temperature is gradually increased.

Another very important cause of off-shades is to inequality of the grades of wool put in the yarn, and which behave differently towards dyestuffs. This one cause has in a number of instances been used to discredit the alleged level dyeing properties of dyestuffs.

Shades having a spotted or flecked appearance may be due to a number of causes, but upon careful investigation they will in most cases be found to result from wrong treatment of material before or after dyeing. It is a fact beyond doubt that such shades cannot occur if the actual dyeing is carefully done. There are also the occasional instances of the uninstructed laborer in the dye house who adds difficultly soluble dyestuffs to a kettle already containing yarn, or where a scoopful of dry dyestuff is sprinkled over a mass of raw stock just placed in a dye vat.

Imperfect penetration of woven fabrics, even when the shades are passable, is due either to defective scouring and washing, or to insufficient boiling.

MORDANTING.

Uneven and shaded effects can be traced to errors in the application of chrome to the wool, the most important being due to the use of too small amount of chrome, in which case the deposit is irregular, or to the use of a mordanting process that is unsuited, as where lactic and sulphuric acid are employed, such a combination causing a too rapid deposit of chrome on the wool. As a matter of fact too little attention has been given by dyers to the mordanting or chroming process generally, as applied to the fixation of chrome colors. Many errors have been charged up against the dyes which would not have occurred had some consideration been paid to the use of the chrome.

It is frequently noticed that during the washing of woolen material, after dyeing, a quantity of color is removed by the first wash water, and may be attributed to imperfect scouring, or to not bringing the bath to a sufficiently high temperature to cause a proper fixation of the chrome-color on the fiber.

Another frequent cause of loose color when dyeing by this process is a failure to correct the hardness of the water used for dyeing. It also happens that an insufficient quantity of acetic acid in the dye bath is responsible for the presence of loose color. Bleeding of colors into adjacent white is sometimes complained of, but it is a fact that the alizarines do not stain white when properly dyed, and it is only due to the accidental omission of chrome that this defect is noticed.

SUMMARY.

From the foregoing we are necessarily inclined to pay proper regard to the following points, which have been amply borne out in practice: Clean scoured and rinsed cloth, yarn, or stock should always be insisted upon by the dyer. A good proportion of dye liquor to the weight of the material to be dyed should always be maintained, bearing in mind that the larger the volume of dye bath, the longer the time of dyeing will be required, and the greater chance of securing absolutely level shades. If shading is necessary, a cooling off of the dye bath is desirable, then add the shading colors, and gradually bring up to the boil again. Loose colors are prevented by maintaining a proper

balance between the amount of dyetuff, chrome and acid.

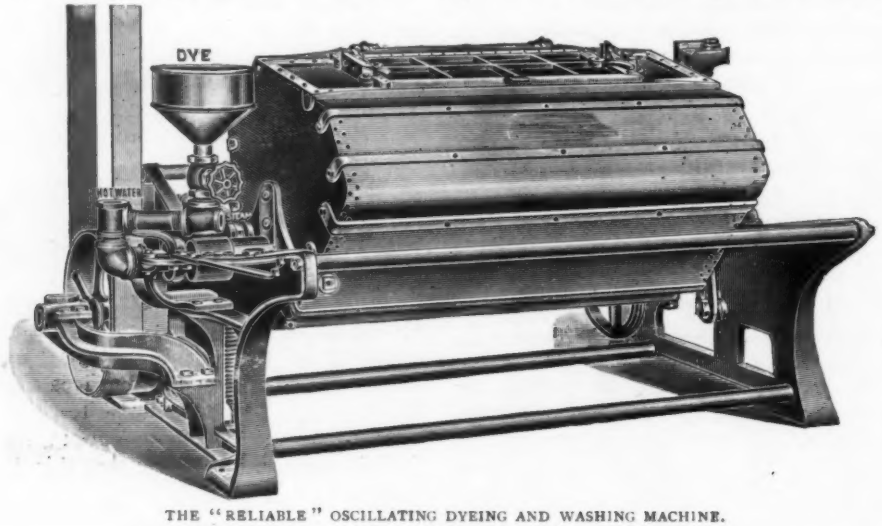
Gradually increasing the temperature of the dye bath during dyeing, with regular turning, is, other conditions being equal, a guarantee of level shades, thorough penetration, and fast colors.

OSCILLATING DYEING AND WASHING MACHINE.

The illustration shows the Reliable oscillating washing and dyeing machine. In some respects it resembles the rotary type of washers and dyeing machines which are used in dyeing and scouring knit goods, but its special feature is the oscillating swaying or rocking to and fro motion, which thoroughly agitates the dye liquor or scouring fluid and causes it to permeate the fabric very thoroughly and at the same time much more rapidly. This agitation of the dye liquor forces it through all portions of the material or garments which are being dyed, working it into the seams which are dyed as evenly as the rest of the garment.

On the inside of the tank there are projecting ribs lengthwise which keep the material submerged and at the same time give it a sufficient motion to be dyed uniformly without permitting it to roll. It has been found that when used as a washing machine the finest laces and fabrics are washed and rinsed perfectly clean and without the slightest damage. The same machine can also be adapted to dry cleaning and the bleaching of knit goods, underwear and similar fabrics.

The admission of the dye liquor, steam or hot water is conveniently and simply arranged for and the tank is quickly and completely drained by an ample waste pipe. The machine is easily loaded and emptied. It has been in practical use long enough in dye works and cleaning establishments to demonstrate its advantages and the manufacturers believe that its economy of time and dye liquor, convenience of operation, uniformity and thoroughness of work, will commend itself to many manufacturers for dyeing, scouring, bleaching or dry cleaning. It is built by the Reliable Foundry & Machine Co., Fort Madison, Iowa.



THE "RELIABLE" OSCILLATING DYEING AND WASHING MACHINE.

The enormous extent of the cotton-ginning industry is measured by the number of bales of cotton ginned during 1904, when the crop attained to 13,500,000 bales, which, at 500 pounds each, represent 6,750,000,000 pounds of cotton passing through the gins.

FAULTS AND DEFECTS IN WOOLEN FINISHING.

From the Dyer and Calico Printer.

Besides his own faults, the finisher has frequently to contend with others due to defective material, as well as careless manipulation in the manufacturing. To these causes burls and burrs are due, which in many cases the finisher is expected either to cover or extract by hand. Burry wool contains the dried seed vessels of the cockle burr which grows luxuriantly on many pasture lands, and the only resource for freeing the wool is to carbonize it after washing.

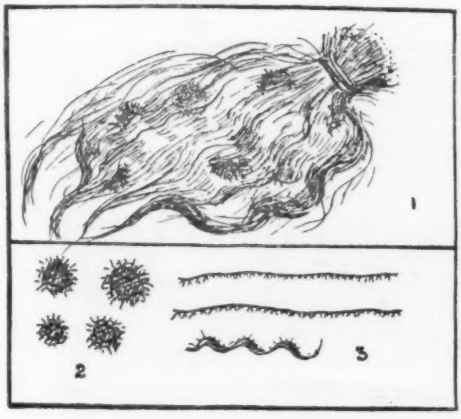
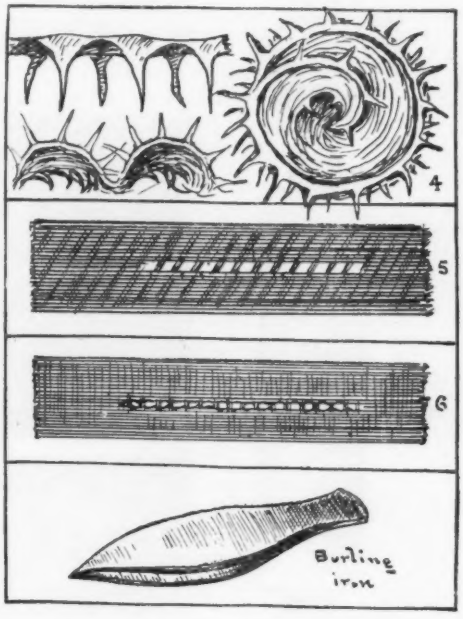


Fig. 1 shows a lock of wool filled with these burrs, from which it is almost hopeless to endeavor to separate them by mechanical means. Such a sample as this would of course be carbonized immediately after washing and before either combing or carding. It occasionally happens that some wools contain a very small amount of burrs, not sufficient to warrant carbonizing according to appearance, yet the few present open out in a surprising manner during the manufacturing processes and contaminate yards of cloth. Fig. 2 illustrates the seed vessels as they occur in the natural fleece, and Fig. 3 shows how they open out during carding and spinning. These being drawn from actual specimens will show clearly how difficult they are to eliminate owing to the mass of broken seeds they possess.

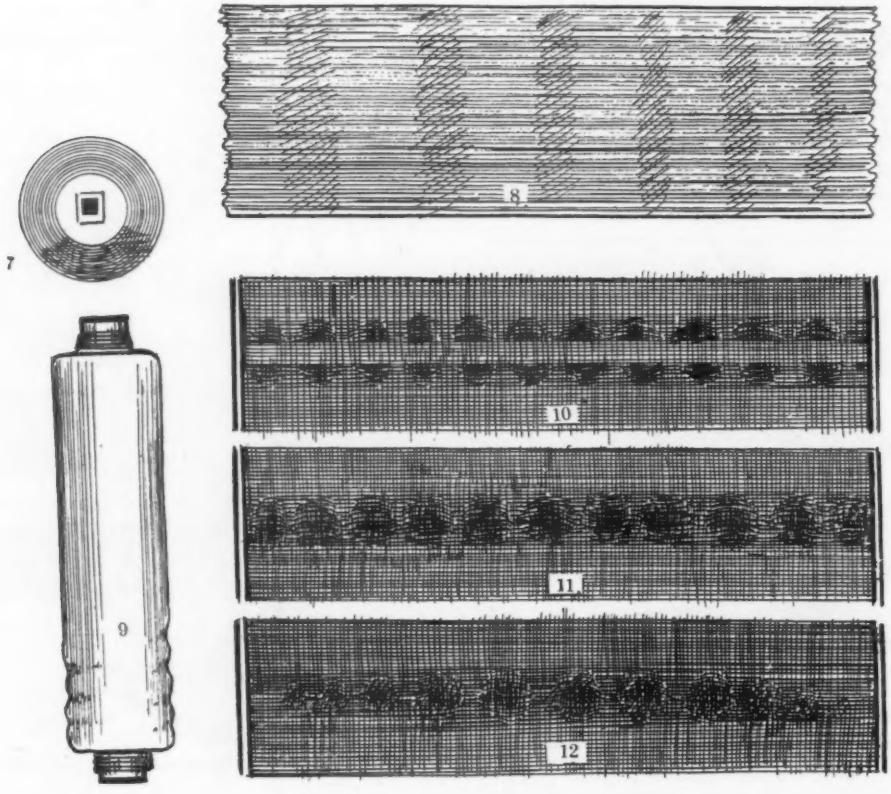
Fig. 4 is an enlarged drawing of a burr, and will be seen to consist of a disc armed around its edge with sharp spines. These hooks tangle up the fleece into felted knots and defy all attempts at removal short of actual disintegration. Each burr consists of two spiral ribbons coiled into a circular form and carrying the seeds between them; when opened out a finer ribbon is found attached to each of the coarser ones, Fig. 3. All these have a double row of spines projecting at different angles, and when once entangled in a woolen or worsted thread are fixed immovably. Attempts to extract them by means of burling irons only result in breaking them off short, or if they do come out they bring the wool thread with them and cause damage.



On account of their hard glassy structure they refuse to take up dyes, and show up in the dyed fabric as seen at Fig. 5. Not only are they impervious to the ordinary wool dyes but refuse to take up the burl dyes compounded of tannins and iron. Fig. 6 is a cotton burl in a dyed cloth, these get in

by accident from rags, wrappers or other cotton articles; it is surprising what a number of burls are formed from a very small amount of cotton. Unlike burrs, cotton burls are easily extracted with a pair of irons, or they can be readily inked over so as to be undistinguishable. Inking these foreign bodies by hand with an ordinary steel pen is an everyday process with many finishers; in some cases they may be pulled out, but inking is at all times safer as it does not disturb the face of the cloth.

Cockling is a difficulty caused in some cases by the manufacturer, and in others by careless treatment in the tentering process. This fault appears on the cloth in the shape of loose baggy places; that is, slack and tight portions of the fabric alternating. Whether due to maker or finisher, the cause is the same in both, irregular shrinkage; but while the finisher's fault is soon remedied, that of the manufacturer is beyond cure. What are known technically as weft rows are frequently the cause of cockles; a weft row simply appears as a straight band across the cloth from one list to the other and is due to a bobbin of different weft. On scouring or crabbing, this belt of foreign weft either shrinks more than the adjoining fabric or less; the first resulting in a tight transverse band with slack places on both sides, and the second in a simple row of depressions, see Figs. 10 and 11. There is no cure for the cockling caused by mixed yarn in the weft; although the fault might be mitigated considerably by careful crab-



bing if it were known that the cloth contained different weft. Unfortunately a fault of this description does not make an appearance until shrinking occurs through the agency of steam or hot water.

(To be continued.)

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 161.

Black on Cotton Yarn.

Diamine Nitrazol Black B B on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Diamine Nitrazol Black B B.
(Cassella Color Co., 182 Front St., N. Y.)
20 lbs. Common Salt.
1 lb. Soda Ash.

Boil for one hour. Then couple with diazotized Paranitraniline C. Paranitraniline C is made up as follows:

2 lbs. Paranitraniline C.
1½ gals. boiling Water.
½ gal. Hydrochloric Acid, 32° Tw.
3½ gals. cold Water.

To this should be added before used
1½ lbs. Nitrite of Soda

dissolved in

1 gal. cold Water,

and when clear should be made up to 20 gals. with water.

For dyeing prepare the bath with

10 gals. of the above liquor.
1 lb. Soda Ash.
6 ozs. Acetate of Soda

for every 100 lbs. of material.

Work the dyed material in this for 1/2 hour cold.

Diamine Nitrazol Black B B gives a bright shade of bluish black, and is suitable for the dyeing of all kinds of cotton material.

Recipe No. 162.

Red on Worsted Yarn.

Sorbine Red B B N on 100 lbs. worsted yarn. Prepare the dyebath with

3 lbs. Sorbine Red B B N.
(Badische Co., 128 Duane St., N. Y.)
15 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 150° F., bring slowly to a boil and dye at a boil for 1 hour.

Sorbine Red B B N is a very even dyeing color which possesses excellent fastness to light.

Recipe No. 163.

Violet on Worsted Piece Goods.

Amazo Violet 12 B on 100 lbs. worsted piece goods. Prepare the dye bath with

2 lbs. Amazo Violet 12 B.
(American Dyewood Company, 84 William St., N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter lukewarm, raise slowly to a boil, and boil for one hour.

Amazo Violet 12 B is a bluish violet, well over toward the medium blue, of excellent level dyeing properties and of extra brightness. It is especially suitable for use in producing and lifting rich blues on all wool piece goods. It may also be used on all other forms of wool.

Recipe No. 164.

Violet on Worsted Yarn.

Fast Mono Chrome Violet S on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Fast Mono Chrome Violet S.
(Kalle & Co., 530 Canal St., N. Y.)
2 lbs. Mono Chrome Mordant S T.

Bring the bath slowly to a boil and boil for 3/4 of an hour, then add

5 lbs. Acetic Acid

and continue the boiling for 3/4 of an hour.

Fast Mono Chrome Violet S possesses excellent fastness to light, weather, washing and fulling, and its fastness in other respects is also good. It is also a level dyeing color.

Recipe No. 165.

Yellow on Worsted Yarn.

Acid Yellow 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Acid Yellow 3 G.
(Read Holliday & Sons, 11 Gold St., N. Y.)
3 lbs. Sulphuric Acid.
20 lbs. Glauber's Salt.

Start the bath lukewarm and raise to a boil gradually and continue at a boil for one-half hour.

Recipe No. 166.

Brown on Cotton Yarn.

Paranil Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Paranil Brown R.
(Berlin Aniline Works, 213 Water St., N. Y.)
40 lbs. Glauber's Salt (Crystals).
2 lbs. Soda Ash.

Enter at 180° F. and dye at a temperature of 200° F. for one hour. Rinse and then develop in a bath made up as follows:

Dissolve 1 lb. 6 ozs. Paranitraniline together with 3 1/4 lbs., 32° Tw., muriatic acid, and 1 qt. boiling water. When dissolved this should be made up to 3 gals. with water.

3/4 lbs. sodium nitrite is then dissolved in 1 qt. of water, and this solution, together with the acid paranitraniline solution are made up to the necessary quantity for developing.

3 lbs. sodium acetate are then added to the bath, and the dyed yarn worked at ordinary temperature for 1/2 hour, then rinsed and dried.

Paranil Brown R possesses good fastness to washing and most of the common color-destroying agencies.

Recipe No. 167.

Olive on Cotton Yarn.

Sulphur Olive F F on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Sulphur Olive F F.
(Berlin Aniline Works, 213 Water St., N. Y.)
30 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
60 lbs. Common Salt.

Dye at a temperature just below the boil for one hour. The above dyeing may be duplicated in a standing bath with the use of 6 1/2 lbs. color.

Sulphur Olive F F possesses good fastness to most of the common color-destroying agencies and is characterized by its clearness of shade.

Recipe No. 168.

Scarlet on Cotton Yarn.

Diazanil Scarlet 6 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazanil Scarlet 6 B.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
30 lbs. Common Salt.
1 lb. Soda Ash.

Dye at a boil or one hour. Then diazotize in cold bath with

3 lbs. Nitrite of Soda.
5 lbs. Hydrochloric Acid, 32° Tw.

Rinse and develop in a bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda, 36° Tw.,

working in the latter bath at 100° F. for 1/2 hour. Wash, soap and dry.

When dyed and developed in this manner, Diazanil Scarlet 6 B possesses excellent fastness to acids, washing, and ironing, and will not crock. Its fastness to light is also far better than the ordinary red of this class, and in general it will be found an excellent color for all classes of cotton dyeing.

Recipe No. 169.

Blue on Worsted Piece Goods.

Amazo Navy Blue B on 100 lbs. worsted piece goods. Prepare the dye bath with

3 lbs. Amazo Navy Blue B.
(American Dyewood Co., 84 William St., N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Sulphuric Acid.

Enter lukewarm, raise slowly to a boil, and boil for one hour.

Amazo Navy Blue B is a concentrated rich navy blue of excellent leveling properties, which is especially adapted for the production of handsome blues on all wool piece goods. It may also be used on all other forms of wool.

Recipe No. 170.

Orange on Cotton and Worsted Union Cloth.

Union Orange X R on 100 lbs. cotton and worsted union cloth. Prepare the dye bath with

3 lbs. Union Orange X R.
(C. Bischoff & Co., 451 Washington St., N. Y.)
25 lbs. Glauber's Salt.

Dye at a boil for one hour.

Union Orange X R will be found to possess an affinity which is almost equal for both cotton and wool fiber. In addition it possesses good fastness to light.

Recipe No. 171.

Blue on Cotton Yarn.

Immedial Direct Blue J N D on 100 lbs. cotton yarn. Prepare the dye bath with

12 lbs. Immedial Direct Blue J N D.
(Cassella Color Co., 182 Front St., N. Y.)
24 lbs. Sodium Sulphide.
5 lbs. Soda Ash.
30 lbs. Common Salt.

Boil for one hour. Squeeze, rinse, expose a few hours to the air, rinse again. Then after-treat for 1/2 hour in a boiling bath made up with up with

1½ lbs. Copper Sulphate.
1½ lbs. Potassium Bichromate.
3 lbs. Acetic Acid.

Immedial Direct Blue J N D gives an excellent shade of blue similar to indigo. It dyes exceedingly level, and like indigo becomes rather more greenish on washing.

Recipe No. 172.

Brown on Cotton Yarn.

Para Brown R on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Para Brown R.
(Farbenfabriken Co., 66 Lafayette St., N. Y.)
30 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour. Then develop by working for 1/2 hour in a cold bath made up as follows:

2 lbs. Paranitraniline.
7 lbs. Hydrochloric Acid, 33° Tw.
10 gals. boiling Water.

Allow to cool, then add

1½ lbs. Sodium Nitrite

which has been previously dissolved in 5 gals. of water, and then made up to the desired volume.

Para Brown R gives a very dark shade of brown which will be found of value in calico printing as a ground color to be discharged white.

Recipe No. 173.

Bright Blue on Worsted Yarn.

Cyanthrol 3 G on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Cyanthrol 3 G.
(Badische Co., 128 Duane St., N. Y.)
15 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 150° F., bring slowly to a boil and dye at a boil for 1 hour.

Cyanthrol 3 G is a very even dyeing color which possesses excellent fastness to light.

Recipe No. 174.

Brown on Worsted Yarn.

Fast Milling Brown W on 100 lbs. worsted yarn. Prepare the dye bath with

3½ lbs. Fast Milling Brown W.
(Read Holliday & Sons, 11 Gold St., N. Y.)
5 lbs. Acetic Acid.
20 lbs. Glauber's Salt.

The color is first dissolved in cold water with the addition of 20 lbs. Glauber's salt and 5 lbs. acetic acid. Start the bath cold and then raise to a boil in 1/2 hour and continue to boil for 1/2 hour longer, then add 1 lb. sulphuric acid and boil for 20 minutes longer.

Recipe No. 175.

Green on Cotton and Worsted Union Cloth.

Union Green O O G on 100 lbs. cotton and worsted union cloth. Prepare the dye bath with

2½ lbs. Union Green O O G.
(C. Bischoff & Co., 451 Washington St., N. Y.)
25 lbs. Glauber's Salt.

Dye at a boil for one hour.

Union Green O O G will be found to possess an affinity which is almost equal for both cotton and wool fiber. In addition it possesses good fastness to light.

Recipe No. 176.

Scarlet on Cotton Yarn.

Diazanil Scarlet G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Diazanil Scarlet G.
(H. A. Metz & Co., 122 Hudson St., N. Y.)
30 lbs. Common Salt.
1 lb. Soda Ash.

Dye at a boil for one hour. Then diazotize in cold bath with

3 lbs. Nitrite of Soda.
5 lbs. Hydrochloric Acid, 32° Tw.

Rinse and develop in a bath made up with

1 lb. Beta Naphthol.
1 lb. Caustic Soda, 36° Tw.,

working in the latter bath at 100° F., for 1/2 hour. Wash, soap and dry.

When dyed and developed in this manner, Diazanil Scarlet G possesses excellent fastness to acids, washing, and ironing, and will not crock. Its fastness to light is also far better than the ordinary red of this class, and in general it will be found an excellent color for all classes of cotton dyeing.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Massachusetts, Boston. Robert Burgess, general manager of the new Maverick Mills, states that at first medium staple goods will be manufactured, and later specialties will be made. Preliminary work toward beginning construction has been started.

*Massachusetts, New Bedford. James E. Stanton, Jr., will be president of the new Apponagansett Co. Mr. Stanton has subscribed for the $480,000 of the $500,000 stock. As noted before, Joseph F. Knowles, James S. Hathaway, Clarence A. Cook, Henry Tiffany, Otis S. Cook and Frederick H. Taber are also interested. The mill will be located on East French Ave.

*New York, Utica. The new Utica Fine Yarn Co. has organized with Wm. Foster, president; Wm. H. Roberts, vice-president; Wm. I. Tober, treasurer; and George L. Wood, secretary.

*North Carolina, Graham. Work will be started as soon as possible on buildings for the River Falls Cotton Mill Co., and J. W. Menefee, president and treasurer of the company advises that he expects to begin the production of goods in about twelve months. The mills will be located at River Falls, but the post office is Graham. Gray goods will be manufactured on initial equipment of perhaps 10,000 spindles with the looms necessary to weave up this production, although the number of looms and spindles has not been fully decided upon. The plant will be operated by water power. J. W. Menefee is attending to the matter of building and awarding of contracts.

*North Carolina, Thomasville. The cotton mill to be built by the Cannon Mills will be known as the Amazon Cotton Mill. The incorporators are James W. Cannon and J. F. Cannon of Concord, N. C., and Charles G. Hill of Winston-Salem, N. C. Capital stock, $150,000. Construction work will be started at once.

*North Carolina, Rockingham. Contract for mill building for the new Entwistle Mfg. Co. has been awarded to W. J. Stephenson & Son of Rockingham at $64,000.

*North Carolina, Warrenton. Construction work has been started on the warehouse for the new Peck Mfg. Co., and will soon begin on the mill building, 132 by 195 ft. Five thousand spindles and preparatory machinery, also a steam and electric power plant will be installed. Thomas D. Peck, formerly of Pittsfield, Mass., is in charge.

*North Carolina, West Durham. Work is well under way on No. 4 Mill of the Erwin Cotton Mills Co. The foundation has been completed, and most of the machinery has been bought. They expect to install a large steam turbine in the power plant.

*Oklahoma, Lawton. The E. L. Shuford Mfg. Co. will be organized with capital stock of $500,000 by E. L. Shuford of Hickory, N. C., and others. They plan to build a mill to be equipped with 10,000 spindles and 340 looms.

Pennsylvania, Philadelphia. George F. Bristow is in charge of a new plant just starting at 1545 Ruan St., Frankford, which will operate 40 looms on Turkish towels and novelties. Four looms have been installed and will be increased to the former number after the company has been incorporated and its business established. The production will be sold direct.

*South Carolina, Great Falls. The Republic Cotton Mills, recently incorporated with capital stock of $600,000, will build a plant here with capacity of 25,600 spindles and 640 dobby looms, driven by electricity from the lines of the Southern Power Co. Robert S. Mebane, Graham, N. C., is president; Thomas B. Fuller, Durham, N. C., vice-president; Hal. B. Mebane, Graham, N. C., secretary and treasurer. J. E. Sirrine of Greenville, S. C., will be architect-engineer in charge. A mill village will be built up to be equipped with general mill-village improvements, including sewerage system, electric lights, water supply, etc. The spinning mill will be 2 stories high, about 635 by 132 ft., and the weave shed will be a 1-story structure. Gray goods will be manufactured. The Dukes and the Southern Power Co. control this company.

*South Carolina, Greers. The Greers Mfg. Co. is making good progress on the erection of buildings.

*South Carolina, Easley. As noted previously the Alice Mills have been incorporated with capital stock of $250,000. E. H. Shanklin, superintendent of the Easley Cotton Mills, has been elected president and treasurer. At present plans are being prepared for a mill to be equipped with 13,000 ring spindles and 325 looms for manufacturing convertible sheeting. Mr. Shanklin does not expect construction work to begin before March 1, 1910, and will not set a date on which manufacturing is likely to be started. The product is to be sold through Woodward, Baldwin & Co. A steam power plant will be constructed.

Enlargements and Improvements.

*Alabama, Anniston. Early next spring the Anniston Yarn Mills will begin construction work on a new mill to be equipped with 3,264 spindles to

increase their present production of 18s to 24s hosiery yarns.

Connecticut, East Hampton. The Summit Thread Co.'s mill will shortly be equipped with automatic sprinklers, and they will erect a tower and two tanks. One tank will hold 20,000 gallons, and is for use of the dye house, and the other tank whose capacity is 40,000 gallons, will be for fire protection.

*Connecticut, Jewett City. Contract has been awarded for a new building for the Ashland Cotton Co., which will be 2 stories high, 100 by 200 ft. As reported previously a new dam is being built, and an electric plant will be installed.

*Connecticut, Norwich. When the Electric power plant of the Falls Co. is completed machinery in the picker room will be driven by individual motors.

*Georgia, Atlanta. It is understood that the building at the corner of Lambert and Tyler Sts., which has been leased by the National Duck Mills, will be equipped for spinning the cotton yarns used by them. Several months ago they advised that it was proposed to equip a spinning plant of 5,000 spindles. They use 7s to 2s ply yarns, which are at present bought.

*Georgia, Canton. Forty-eight cards, 10,800 spindles and 274 looms will be installed in the new building under construction for the Canton Cotton Mills. It is expected this new machinery will be set up and in operation early in January. This will give total equipment of 20,000 spindles and 600 looms. The capital stock is $300,000. R. T. Jones is president, treasurer and buyer. They manufacture blue denims which are sold through Putnam, Hooker & Co., Cincinnati, and Robinson, Hughes Co., Louisville.

Georgia, Chattahoochee. About 5,000 spindles and accompanying machinery will be added to the present equipment of the Whittier Mills Co.

*Georgia, Columbus. Improvements in the dye house of the Eagle & Phenix Mills are about completed. They include a new roof, some new machinery and a concrete floor.

*Georgia, Fort Valley. Proposals for new spinning equipment to be installed by the Fort Valley Knitting Mill are being received. They will build this winter and install machinery in the spring. F. O. Miller is president; A. J. Evans, treasurer, and H. F. B. Booth, superintendent. The treasurer and superintendent attend to the buying.

*Georgia, Greensboro. Nothing will be done for several months toward improving the Mary Leila Cotton Mill. The directors have not definitely decided on the nature of changes to be made. It has been rumored that about $100,000 would be expended.

*Georgia, Summerville. As noted last May the capital stock of the Summerville Cotton Mills will be increased from $150,000 to $185,000, and additions will be made to the present equipment.

*Maine, Lewiston. The new mill which has been under construction for several months for the Hill Mfg. Co. is nearly completed. When equipped this addition will have cost in the neighborhood of $300,000.

Massachusetts, Fall River. An addition will be built to No. 1 Mill of the Bourne Mills in which preparatory machinery will be installed. The addition will be 105 by 40 ft., 3 stories high, and will cost about $15,000.

*Massachusetts, Fall River. At a special meeting of stockholders of the Lincoln Mfg. Co. the directors were authorized to increase the capital stock from $600,000 to $700,000 and add 10,000 spindles. Other particulars of this increase have been given.

Massachusetts, Fall River. The Merchants Mfg. Co. has under consideration plans for adding to the main building, extending it north to Bedford St., bringing the total capacity up to 150,000 spindles.

*Massachusetts, Fitchburg. Four wide looms will be installed in the small addition being built for the Fitchburg Duck Mills.

*Massachusetts, Fitchburg. The addition to be built for the Grant Yarn Co. will be used as a storehouse.

Massachusetts, Lawrence. Work has been started on the foundation for another addition to the Arlington Mills. The enlargement will extend north from No. 4 Mill, and will be 100 by 140 ft., 4 stories high. It will be equipped for the finishing processes of cotton yarn, including winding, quilling and warping. The spinning frames in the new worsted yarn mill will be equipped with individual motors.

Massachusetts, New Bedford. The New England Cotton Yarn Co. will add another story to No. 3 Bennett Mill. This will make it a 4-story structure, 470 by 124 ft.

*Massachusetts, New Bedford. The Soule Mill has filed plans for two additions, one to the weave shed, 178 by 108 ft., and one to the main mill, 172 by 46 ft. Both will be of brick construction. The first one will be one story high and the other 2 stories high. The capital stock was increased in July. Three hundred new looms will be added.

Massachusetts, Shirley. Contract to build an addition to the Samson Cordage Works power house has been awarded to Fiske-Carter Construction Co. of Worcester. The building will be 1 story, 30 by 60 ft., of brick construction. It will cost about $20,000.

*New Hampshire, Claremont. Quilt looms will be installed in the new 2-story brick weave shed under construction for the Monadnock Mills.

New Hampshire, Newmarket. An addition is being built to one of the buildings of the Newmarket Mfg. Co. It is planned to build a new weave shed during the coming year.

*New Jersey, Paterson. Improvements under

way for Geo. T. Frost & Son include the doubling of their braiding department and the installation of machinery for making small cotton ropes.

New York, Buffalo. A two-story warehouse, 50 by 150 ft., to cost in the neighborhood of $20,000, will be built on Chandler St. for the Buffalo Weaving & Belting Co. This addition will enable them to install new weaving equipment in the space in their mill which has been used for a warehouse. They will add 50 looms and 1,500 spindles. Rufus Mathewson is vice-president, treasurer and buyer. The product is cotton and rubber belting, webbings, halters and similar goods.

*North Carolina, Bessemer City. The new spinning mill, which has been under construction for the past three or four months for the Huss Mfg. Co., is nearly completed, and machinery is being installed.

North Carolina, Belmont. New machinery is being installed in the Majestic Mill, which it is reported will more than double its previous capacity. The complete equipment will be 11,000 spindles. Cotton yarns are manufactured.

North Carolina, Concord. Work has been begun on an addition for the Magnolia Mills Co. The new space will be equipped with a slasher and other machinery.

*North Carolina, East Durham. The only change being made at the Pearl Cotton Mills is the installation of 48 new looms to take the place of old looms which are being thrown out.

North Carolina, Gastonia. The installation of 2,000 spindles in the Flint Mfg. Co.'s plant is being completed.

*North Carolina, Jamestown. Improvements at the Oakdale Cotton Mills include a new 2-story brick mill, 103 by 200 ft., and new machinery for manufacturing twine. The equipment will approximately be doubled.

North Carolina, Wilson. The directors of the Wilson Cotton Mills have decided to change from coarse yarns to fine yarns, and have awarded contract for new equipment.

Pennsylvania, Chester. The Aberfoyle Mfg. Co. is making improvements in the old J. Wm. Lewis Mill, and will install new machinery.

Pennsylvania, Philadelphia. The Ontario Spinning Co., manufacturers of cotton hosiery yarns, both mule and ring spun, have recently rebuilt their boiler house and installed two new high pressure boilers, taking the place of a battery of four formerly used by them. They are also making other improvements and alterations to the mill.

Pennsylvania, Philadelphia. The Wayne Manufacturing Co. are installing 20 looms in a part of the tenement mill at Mascher & Oxford Sts., on which they will manufacture Turkish towels.

Rhode Island, Alton. An addition will be built to the Richmond Lace Works.

Rhode Island, Lonsdale. The roof and top story of No. 4 Mill of the Lonsdale Co. is being moved, and the upper story will be replaced with a brick wall corresponding with the rest of the structure.

Rhode Island, North Scituate. The installation of electric power equipment in the North Scituate Cotton Mills is nearly completed.

*Rhode Island, Warren. Machinery is being set up in the new weave shed of the Warren Mfg. Co.

South Carolina, Anderson. Additional machinery will be installed by the Anderson Cotton Mills, including 2,000 spindles and 25 cards. About $50,000 will be expended.

South Carolina, Anderson. The Brogon Mills will add new machinery.

South Carolina, Cherokee Falls. The Cherokee Falls Mfg. Co. has enlarged its picker room.

*South Carolina, Edgefield. Changes at the Beaver Dam Mills, formerly the Edgefield Mfg. Co., are about completed. A $6,000 addition, 80 by 80 ft., has been completed, and new machinery to cost about $40,000 will be installed. G. E. Sirrine, Greenville, S. C., is the architect-engineer in charge.

*South Carolina, Goldville. The new building which has been under construction for some time for the Banna Mfg. Co. is about completed, and 4,096 spindles and 250 looms will be installed. Heretofore this company has manufactured yarns only; but after the new machinery is installed, which will be about January 1, they will weave their production into cloth, selling the product through Grinnell, Willis & Co., New York. The capital stock is $225,000. George M. Wright is president, superintendent and buyer, and J. P. Matthews is treasurer.

South Carolina, Orangeburg. Recently 1,500 spindles were added to the equipment of the Orangeburg Mfg. Co. This increase was necessary to supply their looms with yarn.

South Carolina, Winnsboro. A new engine and new boilers are to be installed in the Fairfield Cotton Mills, and the mills have been closed down for this purpose. Other improvements will be made.

*South Carolina, Westminster. As noted previously the Cheswell Cotton Mill has changed its name to The Oconee Mills Co., and the capital has been increased from $200,000 to $300,000. They are now installing 3,000 more spindles and 2 new speeders. They are changing the production from coarse to fine yarns.

*Tennessee, Nashville. The Warioto Cotton Mills will increase their capacity about 25 per cent. They are building a large addition and when it is completed will operate in all 675 looms and 25,000 spindles.

*Texas, Gonzales. As noted recently, the Gonzales Cotton Mill Co. has been incorporated with capital stock of $100,000 to continue the plant of the same name. They contemplate adding 2,200 spindles and 50 looms. T. F. Harwood has been elected president. The plant may be changed over to electric power.

Vermont, Burlington. New boilers are being installed in the power plant of the Queen City Cotton Co.

Mills Starting Up.

*Connecticut, Vernon. Paul Ackerly, purchaser of the Ravine Mills Co.'s old plant, is engaged in making repairs about the property, and will start up the mil's within a short time. The same products will be manufactured as previously.

WOOLEN.

New Mills.

*Massachusetts, Lawrence. By November 15 it is expected the roof will be on the mill buildings of the Ayer Mills.

*New Jersey, Camden. The plant formerly occupied by William Lund & Son has been secured by the new firm of Jones & Clark, and six worsted spinning frames on the Bradford system will be installed. It is expected the plant will be in readiness by January 1. A. P. Clark was formerly superintendent for Geo. Grayson, Darby, Pennsylvania, and Joseph E. Jones was a foreman for Yewdall & Jones Co.

*Oregon, Portland. Construction work on the site of the old Ross Mill has been started by the Multnomah Mohair Co. Some of the old buildings will be used, but the main mill, which is under construction, will be 90 by 100 ft. It is claimed that by January 1 most of the machinery will be installed. Combing, weaving and spinning machinery will be installed and worsted and mohair goods will be the product. John Young is president and treasurer, and James Coulton, superintendent.

*Pennsylvania, Philadelphia. The Gothic Wilton Rug and Carpet Co., previously noted, have a capital of $35,000. William Scholes is president, William D. Chalk, vice president and general manager, and S. G. Snook, secretary and treasurer. The company has leased first floor of one of the buildings on Lena St., below Armat, formerly used by the Leicester & Continental Mills, in which they are installing 20 looms, eight of which have been put up and will be in operation within a few days. The production of the plant will be sold through New York.

Pennsylvania, West Conshohocken. Under the name of the Conshohocken Spinning Co., Chas. Taylor has started up a plant for the spinning of woolen yarns, operating two sets. It is reported that he has plenty of orders and has under contemplation the enlargement of the plant within a short time. The production is sold direct.

*Rhode Island, Woonsocket. L. W. Jarret and Moses Spencer will equip a worsted spinning plant on the Bradford system in the building formerly occupied by the Perforated Pad Co., as noted previously. They will operate under the style of the Sydney Worsted Co., and will install 1,500 spindles, spinning 10s to 50s yarns. A number of twisting spindles also will be installed. They expect to begin manufacturing December 1. Later the business will be incorporated and Mr. Spencer will be president and superintendent. Mr. Jarret will be treasurer. Mr. Spencer was formerly superintendent of the Alsace Worsted Co., and Mr. Jarret has been a salesman for N. B. K. Brooks, worsted yarn dealer of Boston.

*Vermont, Winooski. Exemption from taxation for five years has been granted the American Woolen Co. on the proposed new worsted yarn mill. This is a $300,000 project. Preliminary construction work has been started and nearly all building materials have been contracted for. E. W. Pitman Co. of Lawrence will do the construction work.

Enlargements and Improvements.

Canada, Ontario, Campbellford. On the completion of the new weave shed under construction for the Trent Valley Woolen Mfg. Co., Ltd., the capacity will be increased by 33 looms.

*Iowa, Davenport. About $20,000 has been expended by the Davenport Woolen Mills Co. on the previously noted improvements. Extensive orders are on hand for Oxfords, fancy cassimeres, flannels, blankets, uniform cloths and skirtings. Four sets of cards are now running and two sets are being set up. Six new looms also are being put in position, taking the place of four old looms which have been thrown out, which gives equipment of 25 looms.

*Maine, Guilford. The additional story built on the M. L. Hussey Woolen Co. is completed and new yarn machinery is being installed.

Maine, Wilton. A new boiler has been installed in the Wilton Woolen Co. to provide power for the increase being made in the weaving department.

Massachusetts, Franklin. Contract has been let for a 2-story addition, 136 by 54 ft., to the Hayward Mills.

*Massachusetts, Lawrence. Machinery is arriving for the new worsted yarn mill of the Arlington Mills. The building is fast being completed, and the interior work will be rushed.

Massachusetts, Lowell. Three new mills will be built for the Bigelow Carpet Co. to be known as Mills No. 17, 18 and 19. Only the foundation for Mill No. 17 will be laid at present. This will be a 2-story building, 277 by 46 ft., which will be of concrete construction with brick walls, and will be used as a dye house. Mill No. 18 will be 5 stories high, 125 by 46 ft., and will be used for a laboratory, dye room and storage. Mill No. 19 will be 3 stories high, 285 by 46 ft., and will be used for storage.

Massachusetts, New Bedford. An enlargement, 82 by 15 ft., is being built to the spinning department of the Whitman Mills.

*Massachusetts, Rochdale. The new dye house under construction for J. D. Clark Co. will be equipped to increase their capacity for piece dyeing. A new boiler is being installed in the new boiler room.

Massachusetts, South Barre. Orders have been placed by the Barre Wool Combing Co. for 12 new combs and accompanying equipment. There is space for this new machinery in the new building erected early this year. Within two months the new power house will be completed.

Massachusetts, Uxbridge. It is reported that the American Woolen Co. has under consideration plans for erecting a weave shed at the Hecla Mill.

New Hampshire, Penacook. A new dye house will be built by the Dustin Island Woolen Mills.

New Jersey, Camden. Howland, Croft, Sons & Co. are completing the installation of a new engine, generator and necessary motors to drive the plant by electricity in the Linen Worsted Mills. All the new equipment will be in full operation in the course of a few days. No addition of any kind will be made to the manufacturing departments.

New York, Jamestown. A 2-story addition, 114 by 70 ft., is being built for the Empire Worsted Mill. It will be equipped with a 400 h. p. steam engine and 40 new looms. J. W. Doubleday is president and L. M. Butman is treasurer and buyer. This new machinery will be started up about January 1.

New York, Wegatchie. A new 30 h. p. boiler will be purchased by Curtis & Youland for heating purposes.

Ohio, Urbana. The capacity of the Urbana Mills Co. is being doubled. The buildings will remain as they are.

*Pennsylvania, Chester. Contracts have not been awarded as yet for the two new boilers to be installed by Geo. C. Hetzel Co. No other changes will be made in the plant.

Pennsylvania, Philadelphia. Plans and specifications have been prepared and bids invited for an addition to the plant of C. H. Masland & Sons, manufacturers of carpets at Amber, Collins and Westmoreland Sts., consisting of a new building 70 by 134 ft., one story in height, with walls of brick.

Pennsylvania, Philadelphia. The Leicester & Continental Mills Co., Lena and Armat Sts., Germantown, in addition to other improvements to the plant, are putting in a new bleachery for bleaching cotton, woolen and worsted yarns with a capacity of 500 pounds per day; two sulphur houses with a capacity of 500 lbs. each per day and a new dry air room with space sufficient to hold 2,000 pounds of yarn. Their picker houses are also being changed over for white and colored work. The plant is very busy in all departments and are running until 9 o'clock at night.

Pennsylvania, Philadelphia. The John B. Stetson Co., manufacturers of felt hats, silk ribbons, braids, etc., is arranging for the erection of a large fireproof addition to its plant at 5th St. and Montgomery Ave. Plans are being prepared for an 8-story office and factory building of brick and reinforced concrete, L shaped, with frontages of 207 feet on Montgomery Ave. and 150 feet on 5th St. The first floor will be devoted to offices and the upper floors for hat manufacturing purposes. The cost of the operation is about $150,000.

Rhode Island, Allendale. Construction work has been started on an addition to the Allendale Worsted Mill.

Rhode Island, Bridgeton. A new 80 h. p. steam engine is being installed in the Bridgeton Worsted Co.'s plant, and 2 new roving frames have been ordered.

*Rhode Island, Harrisville. Exemption from taxation for a number of years has been granted the Wm. Tinkham Co. on a $40,000 mill to be erected within the next 18 months. The new building will be equipped with 150 looms, and will be occupied by the Glen Worsted Mills and the Royal Worsted Mills.

Rhode Island, Providence. The addition which has been under construction for some time for the Colored Worsted Mill is completed.

Rhode Island, Thornton. A new boiler and engine have been installed in the Victoria Mills.

Vermont, Bennington. Twelve new looms arrived this week from Holden, Leonard Co.

Mills Starting Up.

*Massachusetts, North Andover. The washing, scouring and combing department of the Osgood Mills have started manufacturing. Since last April the work of changing the machinery in this plant from woolen to worsted has been in progress.

Minnesota, Fergus Falls. The Fergus Falls Woolen Mill is making preparations to resume manufacturing, and will start October 15 by electric power. Their dam was carried away in a recent freshet.

New Hampshire, North Salem. The Atlas Mfg. Co. has started manufacturing. This company took over the business of the Atlas Worsted Co., as reported.

Mills Shutting Down.

*Connecticut, South Glastonbury. Henry K. W. Welch and George H. Finney, president and treasurer respectively of the Glazier Mfg. Co., recently organized with capital stock of $125,000 to take over and operate the plant of Franklin Glazier & Son, are officers of the J. B. Williams Co. George Pratt is secretary of the new Glazier company and the directors include the above and A. H. Gledhill, superintendent of the mill. The new company is operating the mill and is reported to have plenty of orders on hand.

Massachusetts, Northbridge. The Riverdale Woolen Co. has shut down and probably will not be run again as a shoddy mill. It has not been decided whether the old company will begin manuacturing a new line of goods or whether the property will be sold.

*Virginia, Emporia. It is learned that the Emporia Cotton Mills are shut down and that the plant will be sold.

SILK.

New Mills.

Pennsylvania, Forest City. The Klots Throwing Co. of Scranton has awarded contract to Philadelphia parties for the erection of a silk mill at Forest City. The cost of the plant is estimated at $75,000.

*Pennsylvania, Connellsville. D. G. Dery of Catasauqua will in all probability establish a branch mill at this place. The project has not advanced sufficiently to give a detailed report.

*Pennsylvania, Northampton. The Allen Silk Co. has been granted a charter with capital stock of $50,000. This refers to the new silk mill to be built here by Ferdinand Muckley of Scranton.

Enlargements and Improvements.

Connecticut, Norwich. Additions to cost in the neighborhood of $40,000 will be made by the J. B. Martin Co. Two new buildings will be constructed. One of the buildings will be 2 stories high, 36 by 300 ft., to be used for storage, shipping department and offices, and the other one will be 1 story high, 150 by 60 ft., with saw-tooth roof, to be used for weaving. Looms will be moved to this structure from the old building, and space in the latter will be used for additional winding and warping machinery. It is hoped to have both of these buildings completed by January 1. The company has been incorporated with capital stock of $380,000 under the laws of Maine.

*New Jersey, Phillipsburg. An addition, 60 by 200 ft., 2 stories high, is being made to the weaving department of the Standard Silk Co. An early report of this enlargement stated that 200 new looms for manufacturing broad silks would be installed.

*New York, Amsterdam. A 24 by 100 foot addition to the local mill of Julius Kayser & Co. is nearing completion. Silk gloves and mitts are manufactured.

New York, Canisteo. The Canisteo Silk Co., silk throwers, have ordered new machinery.

Pennsylvania, Upland. Additional looms are being installed in the plant of the Chessauqua Silk Co. There is plenty of space to double the present capacity and when sufficient help can be secured this space will probably all be filled with machinery.

Mills Starting Up.

Connecticut, Turnerville. Eisenstein & Co., proprietors of the Newark Silk Mill, Newark, N. J., have started 4 looms in the plant formerly operated by P. W. Turner & Co., and soon they will have 5 other looms running. Silk ribbons are being manufactured. Daniel Brown, a son-in-law of I. Eisenstein, is in charge.

MISCELLANEOUS.

Canada, Ontario, St. Catharines. The Monarch Knitting Co. of Dunnville, Ontario, has bought the Sunbeam Lamp Factory at this place and will equip it as a finishing plant.

*Connecticut, Mystic. The Royal Linen Mills, Inc., claim that they will begin manufacturing linen goods of all descriptions about December 15, giving employment to about 50 hands. They are erecting a building and will install steam and electric power. M. L. Gilbert is president and S. D. Keene is superintendent. Both these men attend to buying. They advise that they will also have a dye house and sell their goods direct. Their charter authorizes capital of $400,000, classified as $50,000 preferred, and $350,000 common.

Louisiana, New Orleans. The Delta Bag Co., a branch of the Fulton Bag & Cotton Mills of Atlanta, is receiving proposals for the construction of a 5-story brick factory building.

Maine, Alfred. Four new embroidery machines are being installed by the Alfred Embroidery Co.

Maine, Gorham. The Gorham Rug Weaving Co. has been organized and installed one loom in the old engine house on South St. Wass Bros. are the proprietors. They manufacture rugs from old carpets and are interested in cotton warp yarn.

Maine, Westbrook. Richard Goodall, formerly connected with the Westbrook Hammock Co., will locate a hammock manufacturing industry in the old Dana Warp Mill. He will manufacture cotton hammocks.

Massachusetts, Assonet. An additional section is being built on the plant of Daley & Laycock, dyers, bleachers and finishers of cotton goods. A new 150-h. p. boiler also will be installed.

Massachusetts, Boston. A. Ziegler & Sons Co. are making an addition to their finishing department.

*Massachusetts, Brockton. The Lapworth Webbing Co., recently incorporated with capital stock of $60,000 to take over the business of Hutton & Lapworth, has organized with O. H. Bragdon, president; Willard E. Everett, treasurer, agent and buyer, and Charles A. Lapworth, superintendent. They plan to enlarge the plant.

*Massachusetts, Dedham. The new finishing plant to be located in the old buildings of the Merchants' Woolen Mill will be incorporated as the Hodges Finishing Co., with capital stock of $100,000. Some changes will be made in the buildings, and work will be started on this immediately. They will do bleaching, finishing and mercerizing at first, and later do dyeing. Frank B. Hodges of Providence will be treasurer, general manager and buyer. Mr. Hodges was recently with the Queen Dyeing Co., and is a nephew of Albert Horton, founder of that business. Others interested are Charles O. Brightman, a contractor and builder of New Bedford, and Frederick H. Hodges. Operations will be started about January 1.

Massachusetts, Easthampton. Arrangements have been made by the Glendale Elastic Fabrics Co. to enlarge their finishing and shipping departments. Contract has been awarded.

Massachusetts, Mansfield. The Mansfield Bleaching Co., recently incorporated under the laws of Maine with capital stock of $100,000, has purchased the old Crossley Print Works at this place, together with considerable land and water rights, and will equip a plant for bleaching and mercerizing cotton damasks, organdies, etc. It is understood that W. H. Bannon, formerly connected with the Sayles Bleachery and more recently with W. H. Bannon & Co., Providence, R. I., heads the project.

*Massachusetts, North Brookfield. The Oxford Linen Mills are shut down for two weeks to allow the removal of machinery to the new concrete building.

Massachusetts, Springfield. Twelve new winders, a new dresser, and a 250-pound Klauder-Weldon dyeing machine are being installed by the Bay State Thread Works; also a new 150-h. p. engine and a new boiler. They are also improving the water power equipment.

*Massachusetts, Wareham. The New Bedford & Agawam Finishing Co. has been granted a charter with capital stock of $250,000, which is divided into 2,500 shares of $100 each. John W. Knowles of New Bedford is president and holds 1,997 shares. Eugene S. Graves is treasurer, and with Lloyd S. Swain and Oliver Prescott, holds one share Two thousand shares will be issued at once.

*New Jersey, Bridgeton. Construction work has been started on the proposed new building for the Martin Dyeing & Finishing Co. About $40,000 will be expended. They plan to do bleaching hereafter as well as dyeing and finishing.

New Jersey, Bayonne. Leolastic, manufacturers of elastic ribbons, have ordered a number of new looms, and will fill their present buildings. Plans were completed some time ago for a new mill, and it is understood work will be started on this at an early date.

New Jersey, Millville. The Millville Mfg. Co. are fitting up a building, 60 by 200 ft., 2 stories high, formerly used as a foundry. For the present it will be used for storage purposes.

*New Jersey, Paterson. The new mill to be built for the Weidmann Silk Dyeing Co. at Riverside is to take the place of a frame building which is being torn down. The new building will be built on the old site and no addition of any kind will be made to the equipment.

New York, New York City. The Queen Braid Works, 413 West Broadway, manufacturers of braids, dress and cloak trimmings, on 30 braiders and 5 knitting machines, are installing knitting machinery for the manufacture of neckties in addition to their other departments.

New York, New York City. The Feuereisen Braid Co. has been incorporated with capital stock of $12,000 by Max Feuereisen, 19 East 113th St. and others. The company will manufacture dress trimmings and braids at 36 West 15th St. Arthur Brandenstein of the new company is connected with A. Brandenstein & Co. in the same line of business at 11 West 17th St., and Mr. Feuereisen was formerly of Feuereisen & Lasky at 106 Greene St.

Ohio, Miamisburg. An addition is being built for J. C. Groendyke & Co. It will be 257 by 71 ft. Rope machinery will be installed. This company manufactures binder twine from manila and sisal fiber.

North Carolina, Greensboro. The Coulter & Lowry Co., finishers of cotton goods, have announced that no more work for finishing will be received after October 15. All goods received up to that time will be finished, and then the factory will be shut down.

Pennsylvania, Lehighton. A new bleachery, 30 by 50 ft., is being built for the Lehighton Lace Co. On its completion more lace machines will be added. This firm expects to double its present plant within the next twelve months.

*Pennsylvania, Philadelphia. Construction work has been started on the new dye house of the Industrial Dyeing & Finishing Co.

Pennsylvania, Philadelphia. The Frankford Winding Co. are equipping the second floor of the building at 1545 Ruan St., Frankford, with 7 coners and 2 quillers for the coning and quilling of mercerized and cotton yarns. Alfred J. Franklin is the proprietor.

Pennsylvania, Philadelphia. The Lafayette Bleachery, with Kuppner & Masterson as owners, have taken over the old bleachery on Factory St., Frankford, which they have re-equipped for bleaching towels, hosiery, knit goods, warps and yarns. The main office of the company is at Jasper and York Sts.

Pennsylvania, Philadelphia. The M. I. Davidson Co., recently reported as installing a plant for the manufacture of hair cloth at 106 W. Norris St., has in operation 30 looms. The company is not incorporated, Mr. Davidson, who formerly acted as selling agent for Gordon Bros., being the proprietor. The production is sold direct.

Pennsylvania, Philadelphia. The Johnston Taylor Co., manufacturers of hair cloth, are removing their plant from 1729 Gillingham St., Frankford, to the mill on Madison St., east of Kensington Ave., where an increased equipment will be installed.

Pennsylvania, Philadelphia. E. C. Beetem & Sons have leased two floors in the old Concordia Mills at 2d and Morris Sts., into which they will remove their Raglin Handicraft Mills now at Jefferson and Phillip Sts., in which they are manufacturing cloth and rag rugs, curtains, etc., on 24 looms.

Pennsylvania, Philadelphia. The Philadelphia Embroidery Co. are having another story put on their mill at 2720 W. Susquehanna Ave., giving them additional space in which to install more machinery and increase their production which now consists of silk, cotton and mercerized embroideries.

Rhode Island, Arkwright. Two new boilers and a new engine are being installed in the Interlaken Mills at this place.

Rhode Island, Coventry. About $25,000 worth of new machinery will be installed by the Rhode Island Processing Co. This enlargement is necessary to fill their orders.

Rhode Island, Pawtucket. Twenty-two new looms are being added by the Smith Webbing Co. These will not entirely fill up the space in their new building, and more looms will be added shortly.

Rhode Island, Pawtucket. The Eagle Dye Works have shut down temporarily owing to the slow demand for its product. They do cotton dyeing and carding.

Rhode Island, Pawtucket. Blodgett & Orswell Co. are having plans prepared for a new mill to be located near the present dye house and bleachery.

*Rhode Island, Woonsocket. James Gilet has leased the scouring and carbonizing departments of the River Spinning Co., as noted previously, and is operating under the name of the Gilet Carbonizing Co., making a specialty of treating pulled wool and noils. He reports that he has all the customers of the Woonsocket Scouring & Carbonizing Co. of which he was manager. Mr. Gilet is trying to interest capital in a plan to equip a modern up-to-date mill for scouring and carbonizing wool, noils and waste on commission. His present business will be merged in the new company if he succeeds in interesting the necessary capital.

*Texas, Houston. A factory building, 40 by 100 ft., will be built for the South Houston Reginning & Mfg. Co., recently incorporated as noted. They will manufacture cotton quilts and bats, and clean, regin and relint old cotton.

South Carolina, Greenville. Contract has been awarded by the Union Bleaching & Finishing Co. for starch room and calendar room machinery, which will increase their capacity 50 per cent. This does not call for any additional buildings, as their plant was built in the first instance with a view to doubling the machinery equipment originally put in.

FAILURES AND SUSPENSIONS.

New Jersey, Little Falls. The Paterson Dye Works have made an assignment for the benefit of creditors to attorney Edgar M. Tilt of Horton & Tilt. The liabilities are $1,187.77 and the assets $2,220.

New Jersey, Sussex. The Sussex Mills have made an assignment to W. L. McCoy of South Orange for the benefit of creditors. The liabilities are estimated at $54,000, of which $20,000 is secured by bonds, covering the real estate and factory, and the assets are probably $30,000.

Pennsylvania, Philadelphia. The Branson Machine Co., builders of knitting machinery, has made an assignment for the benefit of creditors. No statement of assets or liabilities has yet been made public. The Lipper Mfg. Co., who are creditors, are inviting the co-operation of other creditors so that concerted action may be taken.

FIRES.

Connecticut, Vernon. Fire in the plant of the Vernon Woolen Co. caused about $70,000 loss. The insurance is $90,000. E. C. Hilliard is president and Minor H. White, secretary and treasurer. The mill was idle, but repairs were being made and preparations going forward to resume manufacturing. It has not been decided whether to rebuild.

Massachusetts, Cherry Valley. A slight fire occurred in the Chapel Mills Mfg. Co., causing damage to cards and stock.

New Jersey, Paterson. Fire in the storehouse of the Dolphin Jute Mills caused damage to the extent of $20,000, fully covered by insurance. It is probable the building will have to be torn down and entirely rebuilt.

Pennsylvania, Philadelphia. Fire in the picker house and finishing department of Samuel Bunting, 1202 South 12th St., caused a loss estimated at $10,000.

Pennsylvania, Philadelphia. Fire damaged the second story of the tenement mill at 1729 Gillingham St., Frankford, to the extent of about $1,000, this part of the buildings being occupied by Bevins & Ward, who recently started up a small plant for the manufacture of upholstery fabrics.

Pennsylvania, Philadelphia. Harrison's Looping Mill at 2065 E. Arizona St. was burned out with a loss estimated at about $3,000. The plant which contained about 30 loopers was run on commission looping for the trade.

FACTS AND GOSSIP.

Arkansas, Morrillton. Efforts are being made to organize a stock company to build a woolen mill in this city.

Canada, Montreal. A new cotton manufacturing corporation has been formed under the style of the Shawinigan manufacturing corporation. The capital is placed at $3,500,000, of which $1,000,000 will be issued in common stock and the remaining $2,500,000 in bonds. The promotors are J. N. Greenshields and W. T. Whitehead of Montreal. The mill will be located at Shawinigan Falls, where concessions have been made regarding taxation and other matters.

Connecticut, Killingly. On November 30 the lease of the Davis & Brown Woolen Co. will expore and they will vacate the property. It is understood the property is being offered for sale by W. H. Sayles.

Connecticut, Thompsonville. The Hartford Carpet Co. has purchased land adjoining the plant, and it is understood will erect an addition to one of its mills.

Delaware, Wilmington. It is rumored that the plant formerly occupied by the Delaware Cotton Co., which was bought by Charles C. Kurtz, will be used as a shoe factory. Mr. Kurtz has sold it to Mr. Snellenberg, local manager of N. Snellenberg & Co. and others connected with the shoe and leather industry.

Florida, Jacksonville. Frederick A. Abbott is again communicating with the Board of Trade regarding the location of a fine cotton yarn mill here. The Board of Trade is investigating the project.

Georgia, Covington. It is reported a company with capital stock of $100,000 has been formed for the purpose of building a 5,000-spindle cotton mill. Those interested are D. A. Thompson, T. G. Calloway, J. E. Phillips, J. L. Calloway, W. Cohen and C. G. Smith. It is proposed to start construction work within a month.

*Georgia, Raymond. There is nothing definite regarding the project to establish a cotton mill here. The Raymond Land Co. would like to get in touch with cotton manufacturers.

*Iowa, Bonaparte. G. D. Pocock and associates, recently reported as purchasing the woolen mill of Meek Bros. Co., will organize the Bonaparte Woolen Mills Co. to operate the plant. It is believed manufacturing will be started about January 1.

Massachusetts, Blackinton. The Blackinton Co. has purchased six 20 h. p. motors and by Oct. 15 it is expected that the full equipment of 100 looms will be in operation.

Pennsylvania, Philadelphia. The Novelty Knitting Mills, Feld & Co., proprietors, located at 70-72 North 4th St., manufacturers of sweater coats, report that they are looking for larger quarters into which they will remove their plant and install 30 body machines in addition to the 75 flat knitters and 60 sewing machines now operated by them.

Pennsylvania, Philadelphia. The Liberty Bell Hosiery Mills, 4318 Frankford Ave., have reently passed into the control of S. B. Dingley, the secretary and treasurer of the company, who will continue the plant. A meeting of the company will soon be held for the purpose of electing a president to succeed E. C. Locke, who is no longer with the concern.

Massachusetts, Boston. It is very probable that the Union mills of Hudson and Mechanicsville, New York, will lease the plants of the New England Cotton Yarn Co. in Taunton, Fall River, and New Bedford. Large stockholders of the latter concern have been approached and are favorable to the proposed change, and within the next ten days the proposition will be placed before a meeting of stockholders. The Union Mills guarantee a dividend of 7 1/2 per cent. on the $3,900,000 common stock of the New England Cotton Yarn Co. in place of the 6 per cent. which the stock now pays. The dividend on preferred stock will remain unchanged. Wm. Endicott, Jr., of the firm of Kidder, Peabody & Co., and also president of the Union Mills and the Royal Gem Mills Co. of Herkimer and St. Johnsville, N. Y., stated that the Union Mills are in any event to be merged with Royal Gem Mills Co. and unless some hitch occurred which was not now apparent, the Union Mills will also take over the mills of the New England Cotton Yarn Co. J. H. Reaney will succeed Arthur R. Sharp as general manager. There will be no new company incorporated as they will simply take over the New England Mills on a lease. The matter will be definitely arranged within two weeks.

*Massachusetts, North Oxford. The Narragansett Worsted Co., which recently moved here from Rhode Island, expects to begin manufacturing next week.

Massachusetts, North Oxford. Creditors of the Thayer Woolen Co. have granted an extension on an indebtedness reported to be between $300,000 and $400,000 as follows: Twenty per cent. March 15, 1910; 25 per cent. July 15, 1910; 25 per cent. November 15, 1910, and 30 per cent. March 15, 1911. The company has made no assignment and is to make none. The assets exceed the liabilities by several thousand dollars. On September 1 a new mill was completed and is now operating three sets of cards and 52 looms on union goods. The capital stock is $75,000. Frederick Thayer is president and treasurer and Lawrence F. Kilty is agent, superintendent and buyer.

Massachusetts, Quinapoxet. J. Otis Sibley has purchased the mill property of Cyrus D. Wood & Co. under foreclosure proceedings for $90,000.

Massachusetts, Webster. Plans are under way for the recapitalization of S. Slater & Sons. The company will be capitalized as follows: $2,000,000 5 per cent. 20-year gold first mortgage bonds, and $2,500,000 cumulative 6 per cent., first preferred stock. The equity is to be represented by common stock or second preferred and common stock at the option of Kidder, Peabody & Co., and the amount of such issue is to be determined by them. The trustees will sell to Kidder, Peabody & Co. for $2,500,000 cash the $2,000,000 bonds, all the common or second preferred, and the stock held by them in the Providence, Webster & Springfield Railroad. Kidder, Peabody & Co. may sell to Slater & Sons, Inc., the Moore Spinning Co. plant at North Chelmsford, and receive therefor $800,000 of Slater bonds, increasing the issue from $2,000,000 to $2,800,000, and $800,000 second preferred. Frank Bulkeley Smith will be treasurer and general manager.

*Massachusetts, Westboro. The Westboro Mills are for sale with boiler, engine, dynamo and other power equipment. The plant has 70,000 sq. ft. of floor space. As noted previously, the machinery equipment has been sold to the Magee Carpet Co. of Bloomsburg, Pa.

*Massachusetts, Williamstown. The John S. Boyd Co. has been incorporated with capital stock of $100,000. They manufacture and dye and finish corduroys and velvets. Robert H. A. Hewatt, North Adams, is president; Robert Strong, New York, treasurer, and John S. Boyd, manager.

Personals.

John Ryan has accepted the position as overseer of carding at the Uncasville Mfg. Company, Versailles, Conn. He comes from Valley Falls, R. I.

H. C. Harford, superintendent of the Davis & Brown Woolen Company, Elmville, Conn., has resigned to accept a similar position with the Eagle Lake Mill of the Jefferson Mfg. Company, Jefferson, Mass.

William Hargraves, assistant superintendent of the Stott Woolen Mill, Stottville, N. Y., has been appointed superintendent to succeed A. E. Davis.

W. A. King has been promoted from overseer of winding, etc., to superintendent at the Bibb Mfg. Company, Columbus, Ga.

D. E. Madden has accepted a position as overseer of the cloth room at the Hartsville Cotton Mill, Hartsville, S. C. He formerly held a similar position at the Hermitage Cotton Mill, Camden, S. C.

Edward F. Williams has accepted the position as assistant superintendent and designer at the Middlesex Company, Lowell, Mass. He was formerly employed at the Somerset Mfg. Company, Raritan, N. J.

John F. Canavan has accepted the position as overseer of spinning at the Brighton Mills, Passaic, N. J. He was formerly employed at the Ann & Hope Mills, Lonsdale, R. I.

Joe Hendricks has been promoted to the position of second hand in the carding department at the Northern Ohio Blanket Mills, Cleveland, O.

Zotique Ganthier has accepted the position as overseer of spinning at the Dominion Textile Company, Ltd., Windsor, N. S., Canada. He was formerly employed at Three Rivers, Que., Canada.

W. E. Cheswell, formerly president and manager of the Cheswell Mfg. Company, Westminster, S. C., has returned to assume the superintendency of the Courtney Mfg. Company, Newry, S. C., with which he was formerly connected.

Torrance La Grand, superintendent of the Hanover Mills, Concord, N. C., has resigned to accept the superintendency of the Palmetto Cotton Mills, Palmetto, Ga.

Ira Newsome has been promoted to the overseer of weaving at the Union Mills, Lafayette, Ga.

M. L. Bryant from Darlington, S. C., has accepted the position as overseer of carding in the new Waverly Cotton Mills, Laurinburg, N. C.

James A. Walker, superintendent of the Glen Raven Cotton Mills, Burlington, N. C., has severed his connection with that company.

John E. Shaw has been promoted from overseer of weaving to superintendent of the Steele Mills, Rockingham, N. C., succeeding S. W. Steele, who resigned.

B. P. Howe has accepted the position as overseer of spinning at the Springstein Mill, Chester, S. C. He comes from Winnsboro, S. C.

Geo. K. Tate has accepted the superintendency of the Hannah-Pickett Mills, Rockingham, N. C. He recently resigned as superintendent of the Lockmore Mills, Yorkville, S. C.

E. P. Taft has been appointed superintendent of the Capital City Mills, Columbia, S. C.

A. L. Blanchette, overseer of the slashing department at the Atlantic Cotton Mills, Lawrence, Mass., has severed his connection with that company.

Moses L. Shuttleworth, assistant agent of the Washington Mills, American Woolen Company, Lawrence, Mass., has been appointed agent to succeed the late James Ingram. Robert T. Todd has been appointed assistant agent to succeed Mr. Shuttleworth, Mr. Todd having been superintendent of the dyeing department. Holland Garth has been appointed superintendent of the worsted department at the same mill.

George H. Seelig, assistant foreman of the winding and spinning departments at the Rice Silk Mills, Pittsfield, Mass., has resigned to accept a position as overseer of the spinning and winding departments for a large silk concern at Easton, Pa.

Benjamin Shaw has been appointed overseer of weaving at the Cocheco Mfg. Company, East Rochester, N. H.

A. B. Mole, general manager of the Textile Company, Ltd., Montreal, Quebec, Canada, has severed his connection with that company. He was formerly manager of the W. C. Plunkett & Sons Mill, Adams, Mass., and has recently entered into partnership with T. H. Langford of New York City in the cotton business.

W. S. Williams, purchasing agent of the Arnold Print Works, North Adams, Mass., has severed his connection with that company to accept a position as manager of the bleachery of the New York Mills, New York Mills, Oneida Co., N. Y., and will begin to take up his new duties about November 1.

Pardon N. Dexter, overseer of spinning at the Salmon Falls Mfg. Company, Salmon Falls, N. H., has severed his connection with that company.

Lloyd L. Sykes has accepted the position as superintendent and designer at the Daniels Worsted Company at their mill at West Rutland, Mass. He was formerly employed at the Allen Woolen Mills, Rochester, N. Y.

Patrick J. Duffy, who has been employed at the Apponaug Print Works, Apponaug, R. I., for the past eight years, as their electrician, has severed his connection with that company.

Earl K. Atwood, for the past twelve years in charge of the carding and combing at the Law-

rence Mfg. Company, Lowell, Mass., has severed his connection with that company. He is to accept the position of agent of the Lockwood Company, Waterville, Me.

Frank B. Ricketson, for several years assistant superintendent of the Pierce Mill, New Bedford, Mass., has received a flattering offer from a large mill in Pawtucket, R. I.

Albert Judge has accepted the position as overseer at the Falls Company, Norwich, Conn.

Henry Pahl, overseer of spinning at the Talcott Bros., Talcottville, Conn., has severed his connection with that company to accept a similar position at one of the large mills at Rockville, Conn.

Edward Weingartner, the President of the Arabol Mfg. Co., New York, whose products are a staple with many of our readers, has returned from a prolonged trip to Europe. His journey was a very successful one, connecting recreation and pleasure, with a study of business and its methods in his line.

Isaac J. Flagg has resigned his position at the Bigelow Carpet Company, Clinton, Mass., after thirty-two years of continuous service. He had held the position of electrician for this company.

Fred Drabble, chief engineer at the Stafford Worsted Company, Stafford Springs, Conn., has severed his connection with that company.

William H. K. Abbott, agent of the Lockwood Company, Waterville, Me., has severed his connection with that company.

Peter S. Plouff, who has held the position of superintendent of Hall Bros. Woolen Mill, Hallville, Conn., has severed his connection with that company and purchased an interest in the Wassookeag Woolen Company, Dexter, Me.

John Clements, a designer at the Arlington Mills, Lawrence, Mass., has resigned and accepted a similar position at Pittsfield, Mass.

George A. Ayer, superintendent of the West Boylston Mfg. Company, Easthampton, Mass., has won the cup offered by the Cotton Manufacturers' Association for the best score in golf playing. To hold the cup it was necessary to win twice, Mr. Ayer having won his second victory at Bretton Woods, N. H.

Thomas Sumner, overseer of dyeing at the Wallace & Smith Blanket Mills, La Porte, Ind., has severed his connection with that company.

John Park has been appointed overseer of weaving at the Jefferson Mfg. Company, Jefferson, Mass.

Paul Swartz, designer at A. L. Sayles & Sons, Granite Mill, Pascoag, R. I., has severed his connection with that company.

Peter Costello, Jr., has accepted a position as overseer of finishing at the Black River Woolen Company, Ludlow, Vt.

R. V. Thomas, overseer of carding at the Uncasville Mfg. Company, Versailles, Conn., for the past eighteen months, and previous to that time overseer of carding at the New York Mills Co., New York Mills, Oneida Co., N. Y., has been appointed superintendent of the Pequot Mill, of the Uncasville Mfg. Company, Montville, Conn., and will take up his new duties about Oct. 6.

Everett Hinckley, who has been employed at the Saylesville Bleachery, Pawtucket, R. I., is now in charge of the chemistry and dyeing department at the New Bedford Textile School.

Richard Davis has accepted the position as overseer of spooling and winding at the Blackinton Mfg. Company, Blackinton, Mass. He was formerly in charge of spooling and winding for Waterhouse & Howard, North Adams, Mass.

Earl K. Atwood, for the past twelve years in charge of carding and combing at the Lawrence Mfg. Company, Lowell, Mass., has severed his connection with that company to accept a position as superintendent of the Lockwood Company, Waterville, Me. He succeeds Wm. L. Keene.

J. W. Moore, overseer of the weaving department at the branch mill of the Brainerd & Armstrong Company, Norwich, Conn., has severed his connection with that company to accept a similar position with a large mill at Paterson, N. J.

Jasper Holmes, overseer of dyeing at the Hammond & Knowlton Silk Company, Putnam, Conn., has severed his connection with that company.

Thomas Heatley, designer at the Richard Borden Mfg. Company, Fall River, Mass., has been appointed superintendent of the Taber Mill, New Bedford, Mass.

E. G. Hill has accepted the position as overseer of spinning at the Salmon Falls Mfg. Company, Salmon Falls, N. H.

Frank B. Ricketson, assistant superintendent of the Pierce Mill, New Bedford, Mass., has been appointed agent of the Burgess Mills, Pawtucket, R. I., and will take up his new duties about November 1.

Emmett Ainley, designer at the Darling Woolen Mills, Holliston, Mass., has accepted a position as designer for A. L. Sayles & Son, Granite Mills, Pascoag, R. I., succeeding Paul A. Schwartz.

James Henry, overseer of ring spinning at the No. 1 Mill of the Grosvenordale Company, North Grosvenordale, Conn., has resigned to accept a similar position at Utica, N. Y.

W. N. Wilson, formerly overseer of carding, spinning and slashing at the Mary-Lelia Mills, of Greensboro, Ga., has been appointed overseer of spinning in one of the mills at La Fayette, Ga.

R. A. Fitch, superintendent of the Tarboro Cotton Mill, Tarboro, N. C., has severed his connection with that company and is succeeded by his brother, Sam Fitch, who was promoted from overseer of weaving.

John H. Johnson has accepted a position as overseer of spinning at the Hamburger Mills, Columbus, Ga. He was formerly employed at the Bibb Mfg. Company, same place.

G. M. Robinson, formerly of Ninety-Six, S. C., has accepted a position as overseer of the cloth room at the Glenwood Mills, Easley, S. C.

C. R. Costner has been promoted from second hand to overseer of carding in room No. 1 of the Columbia Duck Mills, New Brookland, S. C., succeeding W. T. Hemrick, who resigned.

J. W. Ingle has accepted the position as overseer of card room No. 2, New Brookland, S. C.

T. B. Rector has been put in charge of the dye plant in addition to his duties as overseer of the cloth room, supply room and shipping at Siluria, Ala.

Julius Bernhard has accepted the position as designer at the Middlesex Company, Lowell, Mass.

Aaron Jewell has accepted the position as superintendent of the Rochester Woolen Company, Rochester, N. H.

Clinton Thought, master mechanic at the Valley Worsted Mills, Providence, R. I., has severed his connection with that company.

William L. Keene, superintendent of the Lockwood Company, Waterville, Me., has severed his connection with that company. The position of agent of this company has been filled by Geo. W. Atwood, succeeding W. H. K. Abbott.

C. D. Jessup has accepted the position as overseer of finishing at the Priscilla Mills, Meridian, Miss. He comes from Winston Salem, N. C.

Roy Brier of the Melville Woolen Company, Fredericksburg, Va., has been appointed superintendent of the Ashaway Woolen Company, Ashaway, R. I.

Frank Coughlin, overseer of napping at the Esmond Mills, Esmond, R. I., has severed his connection with that company. He was presented with a beautiful watch chain and charm by the help in the napping department on his retirement.

Thomas Crofwell has accepted the position as overseer of dyeing at the Stillwater Worsted Company, Greenville, R. I. He was formerly employed at the Bay State Worsted Company, Worcester, Mass.

William Sykes has accepted the position as overseer of dyeing at the Bay State Worsted Company, Worcester, Mass. He was formerly employed at Jefferson, Mass.

Ulick Burke has accepted the position as overseer of dyeing at the Eagle Lake Mills, Jefferson Mfg. Company, Jefferson, Mass.

Samuel Antcliffe has accepted the position as overseer of dyeing at the Somerset Mills, East Madison, Me. He was formerly employed at the Marston Worsted Company, Skowhegan, Me.

F. G. Daniels, superintendent of the Montmorency Mills, of the Dominion Textile Company, Montreal, Canada, has been appointed general manager to succeed A. B. Mole.

Arthur Grentham, assistant in the office of the Marston Worsted Company, Skowhegan, Me., has severed his connection with that company.

R. A. Matthewson, overseer of carding and spinning at the White Bros. Mill, East Jeffrey, N. H., has severed his connection with that company, and is succeeded by T. J. Bassette.

W. H. Lord, superintendent of the Wassookeag Woolen Company, Dexter, Me., has severed his connection with that company.

H. S. Adams, who has held the position as purchasing agent for the Union-Buffalo Mills Co., at Buffalo and Union, S. C., and the Woodruff Cotton Mills, of Woodruff, S. C., has severed his connection with these firms to accept a similar position with the Bates Mfg. Company, Lewiston, Me.

L. E. Kiser, formerly overseer of weaving at the Springstein Mills, Chester, S. C., is now connected with the Brogon Mills, Anderson, S. C.

Will McCombs has resigned as overseer of spinning and assistant superintendent of the Scotland Cotton Mills, Laurinburg, S. C., to accept a position as overseer of carding and spinning at the Waverly Mills, same place.

W. P. Smith, overseer of carding at the Wahoo Mfg. Company, Sargent, Ga., has resigned and is now connected with the Ide Mills, Jacksonville, Ala.

H. F. Gaddy has accepted the position as overseer of carding at the Wahoo Mfg. Company, Sargent, Ga.

J. E. Carter has succeeded E. L. Thompson as overseer of weaving at the Eno Cotton Mills, Hillsboro, N. C.

W. A. McVicker, formerly second hand in the winding department, now has charge of the spinning, spooling and warping in the Highland Park Mill, No. 3, of Charlotte, N. C., on the night run.

F. J. Ward has accepted a position as night overseer of carding with the Fidelity Mfg. Company, Charlotte, N. C.

J. R. Roberts has been appointed overseer of spinning at the Cora Mill, Kings Mountain, N. C.

Mr. Bradley has been appointed superintendent of the Peck Mfg. Company, Warrenton, N. C.

W. D. Hudson has accepted the position as overseer of carding and spinning at the Victory Mills, Fayetteville, N. C.

E. L. Thompson has been appointed superintendent of the Ossipee Mills, at Elon College, N. C. He comes from the Eno Cotton Mill at Hillsboro, N. C.

W. B. Morgan has accepted the position as overseer of weaving at the Ossipee Mill, Elon College, N. C. He comes from the Manetta Mills, Lando, S. C.

D. F. Poole has accepted the position as overseer of weaving at the Victory Cotton Mill, Fayetteville, N. C. He comes from Augusta, Ga.

Chas. Washburn, overseer of dyeing at the Cocheco Mfg. Company, East Rochester, N. H., for the past ten years, has severed his connection with that company.

John Wood, for the past four years superintendent of the Bullock Thread & Twine Company,

Plympton, Mass., has severed his connection with that company.

Otto Seiferth, overseer of spooling, warping, slashing, dressing and winding at the Bibb Mfg. Company, Columbus, Ga., has severed his connection with that company.

Walter Crump, superintendent of the Grace Cotton Mills, Salisbury, N. C., has severed his connection with that company.

George W. Jackson has accepted the position as overseer of ring spinning at the Bernon Mills, Georgiaville, R. I. He comes from Danielson, Conn.

W. E. Wing has accepted the position as master mechanic at the Queen City Cotton Company, Burlington, Vt. He comes from the Kerr Mills, Fall River, Mass.

Webster M. Pike, overseer of dyeing at the Stillwater Worsted Company, Greenville, R. I., has severed his connection with that company.

John H. Farrell has accepted the position as overseer of spinning at the Wyandotte Worsted Company, Waterville, Me. He comes from the Oneko Mills, New Bedford, Mass.

James Knox has accepted the position as overseer of dyeing at the Waucantuck Mills, Uxbridge, Mass.

John D. Bullard, overseer of spinning at the Brickner Woolen Mills, Sheboygan Falls, Wis., has accepted the position of overseer of carding at the Kalamazoo Blanket Mills, Kalamazoo, Mich.

Charles Gledhill, overseer of finishing at the Westmoreland Dye Works, Philadelphia, Pa., has severed his connection with that company.

Thomas H. Kenny has accepted the position as overseer of finishing at the Adams Woolen Company, Adams, Mass. He comes from the Oneko Mills, New Bedford, Mass.

William Stokes, overseer of weaving at the Blackinton Company, Blackinton, Mass., has severed his connection with that firm.

John G. McElvie has been appointed designer at the Richard Borden Mfg. Company, Fall River, Mass. He is a graduate of the Bradford-Durfee Textile School.

George B. Dixon, overseer of carding at the Beacon Mfg. Company, New Bedford, Mass., has severed his connection with that company.

Norman S. Russell, overseer of spinning at the Wakefield Mfg. Company, Wakefield, R. I., has accepted a similar position with the Brickner Woolen Mills, Sheboygan Falls, Wis.

Matthew Allen, overseer of spinning at the Hawthorn Mills, Glenville, Conn., has accepted a similar position with the A. D. Gleason Mill, of Gleasondale, Mass.

James T. Hallitt, overseer of weaving at the Clinton Woolen Company, Clinton, Mich., has severed his connection with that company.

Webster M. Pike has accepted the position as overseer of dyeing at the Hope Worsted Mills, Oakland, R. I. He was formerly employed at the Stillwater Worsted Company, Greenville, R. I.

G. W. Greenbank has accepted the position as overseer of carding and spinning at the Amos Abbott Company's branch mill at North Dexter, Me. He comes from Guilford, Me., and succeeds A. L. Hilton, who resigned.

Julius Schweighofer has been appointed superintendent of the Alsace Worsted Company, Woonsocket, R. I., succeeding Moses Spencer.

John Martin has accepted the position as overseer of weaving at Brainerd & Armstrong's branch mill at Norwich, Conn. He comes from New London, Conn.

Thomas Meehan has severed his connection as overseer of dyeing at the Lebanon Mills, Lebanon, N. H.

J. Walker Wright has accepted the position of superintendent of the Calumet Mfg. Company, Liberty, S. C. He comes from Spartanburg, S. C.

L. W. King has accepted the position of overseer of carding and spinning at the Cowikee Mill, Eufaula, Ala. He comes from the Brown Mfg. Company of Concord, N. C.

W. J. Scott, from the Lowe Mfg. Company, Huntsville, Ala., is now overseer of weaving in one of the mills at Hickory, N. C.

J. T. Dabbs has accepted a position as overseer of spinning, spooling, twisting, reeling and warping at Hamer, S. C. He comes from the Dresden Mills, Fayetteville, N. C.

H. W. Bost has accepted a position as master mechanic at the new Barringer Mill, Rockwell, N. C.

Richard Bost has accepted the position as overseer of carding at the new Barringer Mill, Rockwell, N. C.

F. M. Ward has been appointed overseer of carding and spinning at the Huss Mfg. Company, Bessemer City, N. C.

H. Lee Dearman has accepted the position as overseer of spinning at the Commonwealth Mills, Durham, N. C. He comes from the Golden Belt Mfg. Company of the same place.

D. F. Poole, formerly overseer of weaving at Natchez, Miss., has accepted a position as overseer of weaving at the Victory Mfg. Company, Fayetteville, N. C.

R. M. Gibbs, overseer of weaving at the Lexington Mfg. Company, Lexington, S. C., died recently at Columbia, S. C., after an operation. Mr. Gibbs was 53 years of age, and is survived by a wife, son and daughter.

James J. Brown has accepted the position as second hand in the spinning department at the Queen City Cotton Company, Burlington, Vt. He comes from Manchester, N. H.

Herbert Dow, overseer of dyeing at the Dumbarton Woolen Mills, Dexter, Me., has severed his connection with that company. R. A. O'Donnell succeeds him.

George B. Flood has been appointed purchasing agent at the Arnold Print Works, North Adams, Mass., succeeding W. S. Williams. Mr. Flood has been connected with the Arnold Print Works for several years at their Williamstown and North Pownal Mill.

J. H. Pickford, designer at the Huntington Mfg. Company, Huntington, Mass., has severed his connection with that company.

A. D. Rodgers, overseer of the dressing department at the Cocheco Woolen Mfg. Company, East Rochester, N. H., has severed his connection with that company to accept a similar position with the Burlington Mills, American Woolen Co., Winooski, Vt.

Edward Ashton has been appointed overseer of weaving at the Blackinton Company, Blackinton, Mass.

John Jones, overseer of carding at the Allen Woolen Mill, Rochester, N. Y., has accepted a position as boss carder with the A. D. Gleason Mill, Gleasondale, Mass.

Geo. F. Carew has accepted the position as overseer of dyeing at the Shetucket Worsted Mills, Baltic, Conn. He comes from Rochester, N. H.

Fred Zollar has accepted the position as overseer of finishing at the Jos. Simpson Sons' Company, Toronto, Ont., Canada. He comes from the Rex Knitting Company of Little Falls, N. Y.

Curt J. Vogel has accepted the position as superintendent of the Belleville Hosiery Mills, Belleville, Ill. He was formerly employed at Shenandoah, Ia.

William McClain has been appointed overseer of weaving at the Knoxville Woolen Mills, Knoxville, Tenn. He was formerly employed at Philadelphia, Pa.

*Rhode Island, Pawtucket. In a statement made by the Narragansett Textile Co. an offer of 20 per cent. in cash is made to creditors.

Rhode Island, Woonsocket. Frank J. Prue, 358 Park Ave., manufacturer of men's union suits and worsted mittens, will install a number of new sewing machines.

Rhode Island, Woonsocket. Stockholders of the Glenark Knitting Co. have voted to sell all the real estate and machinery owned by the company.

Virginia, Norfolk. The Knitting Mills Corporation has been formed to take over the knitting mill at Lambert's Point. The officers are Garland P. Peed, president; W. L. Lamberdin, vice president, and H. R. Furr, secretary and treasurer. It is planned to begin manufacturing with 100 hands about November 1, and later to increase the capacity and output.

DEATHS.

Joseph B. Bancroft, president of the Draper Company, died at his home in Hopedale on October 25th at the advanced age of 88 years. Mr. Bancroft had been identified with the Draper works almost from the beginning of the enterprise by George Draper, father of the present generation of managers, who, with his brother, started the business which was conducted under the name of George Draper and George Draper & Sons. Mr. Bancroft was for many years the superintendent and agent and upon the incorporation of the Draper Company became its vice-president and later president. Mr. Bancroft was a man of quiet tastes and devoted himself closely to his business interests, never seeking public office, although at times he served as selectman and as representative to the General Court. For many years he was director in the Home National Bank in Milford. His charities were quiet and unostentatious. The fine granite library at Hopedale he gave as a memorial to his deceased wife. Mr. Bancroft was one of ten children and had ten children of his own, of whom five are living. His son, Eben D. Bancroft, who is one of the officers of the Draper Company, and four daughters survive him.

James Ingram, agent of the Washington Mills, American Woolen Company, Lawrence, Mass., died at a private hospital in Boston on Thursday afternoon, September 30. Mr. Ingram was considered one of the most practical woolen mill agents in this country. He was a self-made man and his success was entirely due to his own efforts. He was born in Wiltshire, England, in 1852 and came to this country in 1874. His first position was with the Wanskuck Mills of Providence, R. I., as weaver. He afterwards learned loom fixing and his next position was at Clayville, N. Y., where he worked for several years. From Clayville he went to Lawrence and accepted the position at the Washington Mills. The mill had but a few looms at that time but later fifty additional machines were installed. This plant now has between 1,500 and 1,600 looms and employ 6,000 hands. His ability as an overseer was soon noted by the management and in 1891 he was promoted to the position of superintendent which he held until the mill was taken over by the American Woolen Company when he was made agent.

Jos. W. Bailey, twenty-two years of age, employed in the finishing department at the National & Providence Worsted Mills, Providence, R. I., died suddenly on his way to his boarding place on Amherst St.

Herbert Bailey, who has held the position as postmaster at Claremont, N. H., died at that place at the age of 67 years. Mr. Bailey was at one time engaged in the manufacture of cotton goods and an owner of what was known at one time as the Bailey Mills of Claremont. He retired from business some years ago and is survived by a wife and five daughters.

William A. Lehan, superintendent of the Burgess Mills, Pawtucket, R. I., died at his home in

that city, Monday, October 4. Mr. Lehan had been in his usual health during the day and death came very suddenly after retiring for the night. He had been employed at the Burgess Mills since it started and was formerly engaged with the Slater Mfg. Company.

Thomas W. Greaves, one of the oldest and best known knit goods manufacturers of Germantown, died at his home, 4947 Wakefield St., on September 4th last.

Charles D. Palmer, a member of the State Board of Arbitration, died at his home in Belvidere, a suburb of Lowell, Mass., of Bright's disease. He leaves a wife, a daughter and two sons.

Verne McAlpine, employed as machinist at the American Thread Company, was found dead Friday, Sept. 24, by a crew of hand car men employed on the Canadian-Pacific R. R. He had been suffering several days with a slight illness and it is believed he committed suicide.

Edward Bishop, 78 years of age, and one of the most respected citizens of Hinsdale, N. H., died September 16. He had been in failing health for several months. He spent the greater part of his life in the woolen business, his father being a manufacturer of woolen goods and built the mill which is now owned and operated by P. F. Amidon of Hinsdale, N. H.

Robert J. Hoguet, a director of the Bank of Washington Heights and numerous industrial corporations, died at the age of 71 years at his home, 152 Riverside Drive, New York City, October 8. He was born in this city of French ancestry, the son of Henry Hoguet, once president of the Emigrant Industrial Savings Bank. He was educated at Bernard's Academy and later at St. Francis Xavier College in this city. He began his business career as a commission merchant and auctioneer, but in 1889 retired to devote himself to the management of his property and to charitable work, especially to juvenile reform. He was for several years a director in the National Park Bank, in the Mechanics' and Traders' Bank and the Broadway National Bank, now merged into the Mercantile National Bank. Mr. Hoguet was one of the founders of the Catholic Club, of which he was at one time president. He was also a member of the New York Catholic Protectory. Mr. Hoguet was actively interested in the raw silk industry, being president of the New York Silk Conditioning Works, the first establishment in the country for testing textiles, and also of the Security Silk Storage Company. He was prominent in several Franco-American activities, among others the Alliance Francaise. He is survived by his widow, who was Miss Marie Noel, and by six children.

Richard I. Field, one of the oldest woolen merchants in Chicago, died at his home in that city, Saturday, October 16, after a prolonged illness. The remains were interred in the Rose Hill Cemetery. He was born in New York, Nov. 25, 1841, and was at one time connected with the firm of Field, Benedict & Company. This firm discontinued business in 1893 and since that time Mr. Field has been the Western representative of several Eastern woolen mills. He was a member of the Union League Club.

Herman Loeb, a member of the firm of Goodman, Loeb & Company, manufacturers of dress and millinery trimmings, with mill at 428 North 13th St., Philadelphia, Pa., died at the Lorraine Hotel in that city. He underwent an operation for appendicitus last June and had not fully recovered. He was a member of the Merchants' Club and a director of the Federation of Charities. Was 51 years of age, and is survived by a wife and two sons.

Wm. J. Benn, former superintendent of the firm of Stephen, Sanford & Sons, carpet manufacturers of Amsterdam, N. Y., died at his home in that city, Saturday, October 11, at the age of 62 years. He was born in Hagerman, N. Y., Aug. 28, 1847, and came to Amsterdam in 1870 to enter the carpet manufacturing plant of the above firm in the capacity of clerk. By close attention to his duties, and faithful performance of the same, he was soon appointed to the position of superintendent. He is survived by a wife and one son.

Andrew Reid, a foreman for many years at the Barbour Flax Spinning Company, Paterson, N. J., fell dead in the firm's office, Monday, October 18.

James Estes, well known in mill circles, having been connected with a number of Rhode Island cotton mills as agent and master mechanic, died at his home, 249 Waterman St., Providence, R. I. He had been in ill health for the past three or four months, and was in his seventy-seventh year. He was born in Fall River in 1833 and was connected at one time with the Berkeley Mfg. Company, the Pontiac Mills, the Potomska Mills, and a number of mills in New Hampshire. He retired from active business life about thirteen years ago and is survived by a wife and three sons.

William F. Scheerer, senior member of the firm of W. F. Scheerer & Sons, manufacturers of knit underwear at Pottstown, Pa., died at his home in that city at the age of 74 years. He was a former resident of Philadelphia.

Jas. E. Cheetham, overseer of dressing at the American Mills Company, Rockville, Conn., died very suddenly while sitting at his desk in the dressing department at that mill. He had apparently been as well as usual when leaving home in the morning, although he had not been feeling well for a number of years. The body was removed to his home on Prospect St. Funeral services were held at the Baptist Church, October 15. He was born in Blackburn, England, in 1883 and is survived by a wife, one daughter, two sons, a brother and a sister.

Frank H. Thompson, assistant superintendent of the Draper Company, Hopedale, Mass., died October 19, at the age of 42 years. He had gone to Rutland, Mass., for treatment and had lived in Hopedale for about ten years.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The American Buyers' Directory of the Carpet, Upholstery and Interior Decorative Trades; The American Carpet and Upholstery Journal, Philadelphia, Pa.; 160 pages, 6 by 9.

We have received a copy of this directory for 1909-10. The names of the firms are arranged alphabetically, the address and line of business being given for each. In addition to this alphabetical list, there are classified lists of manufacturers, importers and jobbers, the whole forming a very useful handbook for the carpet, upholstery and interior decorative trades.

Progress and Profit for Mill Men; by Henry D. Martin; published by the author at Clinton, Mass.; 212 pages, 6 by 9 1/2.

The reader will find in this book much useful information regarding mill management. While relating chiefly to cotton manufacturing, there are a number of chapters on the management of mill help, how to prevent waste and other subjects which are of interest to manufacturers of all kinds.

A Technical Cyclopedia (Lexikon der Gesamten Technik); by Otto Lueger; Deutsche Verlags-Anstalt; Stuttgart and Leipzig, Germany; complete in 40 parts. Price $100.00. The text is in German.

We have received Nos. 36 and 37 of this elaborate lexicon, which is to be completed in 40 parts. The work has been prepared with great care, a large corps of directors having assisted Herr Leuger in the preparation of the work, which is profusely illustrated. The text is in German.

The City of Bradford Technical College, Bradford, England; Calendar for 1909-10.

We have received a copy of the annual calendar of the Bradford Technical College. It contains plans of the buildings, exterior and interior views, and full details regarding the courses.

Business Literature.

Jubilee Booklet of Willcox & Gibbs Sewing Machine Company.

The sewing machine plays such an important part in our domestic and industrial activity, and the names of Willcox and Gibbs have been so closely identified with it from the beginning that fifty years seems a short time in which to have accomplished so much, and yet it is a very long time in the history of American industrial enterprise.

It was in 1855 that James E. A. Gibbs first succeeded in making his practical single thread sewing machine, and in 1859 the Willcox & Gibbs Sewing Machine Co. began business and placed on the market their perfected machine containing Gibbs' unique device. This Jubilee booklet just issued tells something of the wonderful growth and expansion of the business since that early period, and illustrates and describes the present line of developed machinery, adapted for household use as well as for manufacturing purposes.

The latter styles include the automatic manufacturing and measuring tension machines with a speed of 3,000 stitches per minute, the straw hat machines, both visible and concealed stitch, the seaming and trimming machine for hosiery and underwear, the famous "Overlock" machine for seaming and hemming hosiery, garments and stockings, and overedging all fabrics, and last but not least the high speed locksmith machine which can make 4,000 perfect stitches per minute where factory conditions permit.

These are their standard types of machines, and in addition they have specialized types for all sorts of special work.

Copies of the booklet may be had on application to their New York Office, 658 Broadway.

Cork Insert Tests: The National Brake & Clutch Co., 16 State St., Boston, have just issued in pamphlet form, the results of the pulley tests recently made at the Worcester Polytechnic Institute and the Lowell Textile School which were mentioned in the paper read before the National Association of Cotton Manufacturers at the recent convention. The summary of results shows a percentage of gain ranging from 35 per cent. on wood rim pulleys with cork inserts over leather lagged pulleys without inserts, up to 60 per cent. gain in power transmitted with steel pulleys with inserts over the same without the inserts. Copies of the pamphlet may be had without cost on application to the National Brake & Clutch Co.

The Purchase of Coal; Arthur D. Little, Inc., 93 Broad St., Boston.

An attractive pamphlet bearing on the fuel problem and explaining the work done by their department of fuel engineering, which advises and tests as to the proper character of coal to be used to get best results with any particular plant and under the special conditions of each factory. Ordinarily the boiler plant is neglected because possibilities of saving are little understood and yet there is no place in the manufacturing plant where greater savings are possible. This pamphlet should set some manufacturers thinking. It will be mailed free on application.

Skein Winders; Easton & Burnham Machine Co., Pawtucket, R. I.

An attractive 14-page booklet in which the skein winders built by this company are described and illustrated. There is also an illustrated list of parts.

Steam Turbines; the Terry Steam Turbine Co., 90 West St., New York.

A new catalogue describing the slow speed steam turbine built by this company, and giving details which a prospective purchaser of this class of machinery would wish to know.

A Ten Foot Pulley Manufactured in Three Days.

The Oneida Steel Pulley Co., of Oneida, N. Y., recently established a record for prompt delivery of a large pulley. The Bay State Milling Co. of Winona, Minn., needed a pulley, 10 ft. in diameter with an 18-in. face to fit a 4 7/16-in. shaft. Like the man from Texas when he needed his gun, —they needed it badly. A cast iron pulley was out of the question, for every day's delay meant a loss of hundreds of dollars to the milling concern. So they got in communication with the Strong-Scott Mfg. Co. of Minneapolis, Minn.,—the Oneida Steel Pulley Co.'s agents for that territory, who agreed to take the order and lay the pulley down in Winona within a week.

The factory received the order on Monday morning. The parts had to be stamped and assembled, from the smallest brace to the huge rim. On the following Wednesday afternoon,—three days later, —the pulley was shipped. This certainly reflects credit on the equipment of the pulley people. The gross shipping weight was 1,030 lbs. The pulley was shipped by express. It arrived at Winona Thursday. A cast iron pulley of the same dimensions would have weighed at least 4,000 lbs.

Old Fort Mills Instals the Eureka System.

A contract has just been signed by the Old Fort Knitting Mills and the Dodge Manufacturing Company, Mishawaka, Ind., by which a Eureka water softener and purifier will be installed at the new plant of the Old Fort people at Fort Wayne, Ind., now in course of construction. According to the plans and specifications, the Eureka apparatus will have a capacity of treating 1,000 gallons of water per hour, the treated effluent being piped to an automatically controlled steel storage tank of 2,500 gallons capacity. City water will be treated in the Eureka machine, the processed supply being used in dyeing and other manufacturing work, as well as for feeding the boilers, the water in its present state having been found very unsatisfactory for this purpose. After treatment it is non-scale forming.

This will be the second textile concern at Fort Wayne equipped with the Dodge apparatus, the Wayne Knitting Mills being the first. The system used by the latter has a capacity of 10,000 gallons per hour. The cost of treatment at Fort Wayne runs in the neighborhood of two cents per 1,000 gallons.

Calder Machine Works.

The Calder Machine Works, which have been located at 325 Race St., Philadelphia, where they manufactured spindles, flyers, caps and tubes and all parts for worsted and silk spinners, being noted for their quick deliveries, have removed their establishment to larger quarters at 420 North Third St., where they will be glad to see any of their customers or receive any orders which they may send to them.

Whitin Machine Works Buys Providence Machine Co.

The Whitin Machine Works has acquired the business of the Providence Machine Co., Providence, R. I., builders of cotton and worsted roving frames, and will hereafter build this well known line of machinery at their Whitinsville works. The Providence frames have always ranked among the best in the market and will round out the Whitin line of cotton machinery to include practically everything in the way of machine equipment for cotton mills.

Dye Sticks.

There is knack and knowledge required in making dye sticks. In the first place the stock has to be just right, carefully selected and seasoned for the purpose, the finish has to be perfect and the purpose for which the sticks are to be used has a bearing that requires experience on the part of the manufacturer. Frank Bailey of Cedarbrook, N. J., has for years been making a specialty of the manufacture of dye sticks, dye and bleach house poles, wood rolls and all sorts of wood specialties for dyers and finishers. Manufacturers who are guided by his experience seem to have no cause for complaint.

Tantalum Lamps.

The General Electric Company reports very gratifying sales of Tantalum lamps. The sales of this lamp are more than double what they were a year ago and the lamp appears to be sharing with the demand for high efficiency lamps created by the introduction of Tungsten lamps. The Tantalum lamp, as at present supplied, is giving most excellent life service. Contrary to general belief, these lamps will give good commercial life on an alternating current of 60 cycles or less. Their life on this frequency will average well above 600 hours. An interesting order recently received called for 1,900 Tantalum lamps for the U. S. war vessels attending the Hudson-Fulton celebration in New York.

Cost of Freight vs. Horse-Power.

Charles T. Main, the mill engineer and architect, has estimated that in an ordinary plain cotton mill, running on counts averaging 30s, the weight of raw material brought annually to the mill would be about 40 tons per 1,000 spindles. The outgoing freight would be about 30 tons of finished product and 5 tons of waste. Calling all other supplies, etc., 5 tons, we have a total weight moved of about 80 tons. Estimating the power required as 20 h. p. per 1,000 spindles, the amount of freight per horse-power would equal $80 \div 20 = 4.00$ tons per year. If a saving of 50 cents per ton can be made by locating nearer the base of supplies and markets, the saving should either be deducted from the cost of steam power, or added to the cost of water power in estimating their comparative value.

General Electric Company Awards at A. Y. P. Exposition.

The General Electric Company has received grand prizes (highest award) at the Alaska-Yukon-Pacific Exposition in each class of electrical apparatus in which an exhibit was made by the company. General Electric apparatus was ranked first in the following divisions:

Apparatus for Cooking by Electricity, Apparatus for Heating by Electricity, Automatic Motor Starters, Arc Lamps, Bonds, Cabinets, Circuit Breakers, Cutouts, Fans, Indicating Instruments, Integrating Instruments, Insulated Wires, Insulated Cables, Incandescent Lamps, Mine Locomotives, Motor Generators, Motors for Direct Current, Motors for Alternating Current, Recording Instruments, Rectifiers (Mercury Arc), Rheostats, Sockets, Switches, Transformers, Wiring Devices.

General Electric turbines were also entered in the Government exhibit in which no awards were made.

Experiments in Mercerizing.

William W. Crosby, who is now associated with F. W. Dean, mill engineer and architect, of Boston, is engaged upon important experiments in mercerizing. It will be remembered that Mr. Crosby, formerly Principal of the Lowell Textile School, was one of the experts in the suit of the American Mercerizing Co. and others versus the Hampton Co. and others. The decision in this case, which was in favor of the defendants, the Hampton Co. and others, has been recently handed down.

An Old Concern Builds New Factory.

The J. A. Gowdey Reed & Harness Mfg. Co. of Providence, R. I., are erecting a factory building at 1226 North Main St., Providence, R. I., and will remove from their present building, 40 Clifford St., which they have occupied for the past 48 years on or about Dec. 1, 1909. The new building will be a one-story and basement brick, 79 by 45 ft., which will give them much increased factory space and enable them to supply the demand for their ever increasing patronage. Electric power will be used throughout.

Removal Notice.

James Smith & Son have removed their Philadelphia office to 315 W. Lehigh Ave., where they will have larger and more commodious quarters for both office and supply room, while still retaining a desirable location in the center of the mill district.

They are also pleased to advise us that owing to the general satisfaction given by their latest improved comb, they have been compelled to double their entire plant, and as their mill buildings will be finished and the new machinery installed early next month, they will be in a decidedly better position to fill orders.

Better Lighting in Weaving Mill.

In building the No. 3 weaving mill of the Aetna Mills, Watertown, Mass., the best possible light was desired, yet this could not be obtained by simply using larger windows, for the contemplated use of high-speed looms made stable and rigid walls necessary. The new mill, designed by and constructed under the direction of F. W. Dean, mill architect and engineer, Boston, is of pilaster construction, which allows less space between the windows while maintaining the desired wall strength.

With practically the same glass area as in the Nos. 1 and 2 mills, a lighting effect 33 1/3 per cent. better was obtained by locating the windows higher from the floor and making them of greater width. From a practical standpoint the results are said to be even better than the figures indicate. The better lighting is very marked as one stands where the mills join and looks either way.

"1915" Boston Exposition.

This exposition will be held from Nov. 1 to Nov. 27 in the old Art Museum Building in Copley Square. It is expected to be a collection of exhibits by many diversified agencies engaged in work for the improvement of the city. Its object is to show the citizens of Boston and the surrounding places within the metropolitan area what are the present needs of the city and how those needs may be met. It is intended to give every organization interested in the betterment of Boston an opportunity to show the public what it is planning to do and what it would like to have the public feel it ought to be supported in doing for the next five years. The "1915" Boston movement deserves the active aid of every one interested in the development of the city and this exhibition cannot fail to give strong impetus to the improvement work.

The exhibits will be divided in the following departments:

I. The Visible City: (a) City Planning; (b) Streets and Boulevards; (c) Parks; (d) Harbor and Docks; (e) Transportation; (f) Public Buildings; (g) Housing; (h) Health; (i) Sanitation; (j) Illumination; (k) Communication; (l) Protection and Safety.

II. Educational and Social: (a) Schools and Colleges; (b) Industrial Education; (c) Playgrounds; (d) Gymnasiums; (e) Libraries; (f) Cultural and Social Organizations; (g) Citizens' Associations; (h) Press and Publishing; (I) Charities.

III. Economic: (a) City Resources; (b) Labor Organizations; (c) Finance; (d) Insurance; (e) Advertising Boston.

IV. Attractions: (a) Marionettes; (b) Moving Pictures; (c) Lectures; (d) Music; (e) Special Entertainments.

*Georgia, Albany. Work has been started on foundations for the Albany Cotton Mills. The main building will be 4 stories high, 135 by 185 feet. A cotton warehouse and separate power house also will be built.

Charles Beck Company.

A co-partnership with the above name was formed on Nov. 1, which has purchased the Charles Beck Paper Co., Ltd., of Philadelphia, assuming its liabilities and contracts as well as taking over its assets. The members of the new partnership comprise the same personnel and the interests remain as in the former company.

They are manufacturers and distributors of machinery and paper and when the old name was adopted the machinery department was in its infancy. Its rapid development has made the change advisable so as to give a better conception of the varied nature of the business which is now carried on.

Linen Bleaching Process.

In the Wants and For Sale column of this issue there is an advertisement of the United States' right in a new linen bleaching process which is the invention of a practical linen bleacher now holding a responsible position in England. Samples of the linen yarn, before and after bleaching, may be seen at the office of the Textile World Record. Samples sent to us have been brought to their present color in two days after boiling. They are taken from lots of 2,000 pounds each and show most excellent results.

First T. P. A. Meeting.

The first of the Technical Publicity Association's monthly meetings for 1909-10 was held Thursday evening, October 14, at its headquarters, 14 Gramercy Park, New York. There was a good attendance. All enjoyed the informal dinner, after which came an interesting program.

The president of the association, Mr. Charles S. Redfield, advertising manager of the Yale and Towne Manufacturing Company, was toastmaster. The only extended address was that of Mr. George French, editor of Advertising and Selling. Preceding his remarks the attention of the members was occupied with reports of committees. The chairmen who were called upon outlined the work to be done during the winter months.

Mr. Howard M. Post, advertising manager of the Western Electric Company, told of plans for a systematic, analytical study of effectually tracing results from trade paper advertising. The keying method, he said, has proved inadequate. There should be some way of determining the effect of such advertising, declared Mr. Post. At the conclusion of a discussion of this subject in which every point of view was presented, Mr. Post was made chairman of a committee to outline this study work for the association.

"It is about time for advertisers to cease to shy at that word Psychology," said Mr. French. His remarks were an interesting presentation of the psychological and artistic aspect of advertising. His hearers were taken into the field of optics, and shown the effect advertisements have upon the eye of the reader.

Mr. French took as his text the postulate of Hugh Chalmers in a recent address at Louisville. Mr. Chalmers he referred to as "the greatest salesman, perhaps the greatest advertiser, in the country." This postulate is that every sale by anyone anywhere is made in a man's mind—the mind of the one to become the purchaser.

"Advertising is profitable," said he, "only when we consider this one thing. The individual advertisers are the men who create, who place, who look at this. If I am to do anything, if I am to be effective, I must get the mind of the man I am to sell goods to. We all realize this, and all work towards it.

"If we want to arrive at any point, even if that point be the north pole, we want to locate that place first—to fix it on the map. I will assume that in order to sell goods there must be a salesmanship message in the mind of the customer. The question is how to place that message; what kind of place is the mind; how does it comport itself; what that message is to be, and how is it to be sent?"

This led to the statement of the subject, psychology. He made his chief point in the phenomenon of suggestion.

"It is well to assume," continued Mr. French, "without any discussion, that every human mind is favorably inclined to receive a suggestion. This is a physiological fact, established and indisputable. There are many fallacious ideas in circulation about suggestion. There is nothing occult about it. It is not even mental, but purely a physical quality of the mind. It is guided by definite, well-known, or rather well-ascertained laws. Memories and forgotten knowledge are in the mind, and help it to make its decision."

The illustration Mr. French gave was that of a fork in a road. "A man must decide," he said, "which way to turn, whether right or left. Once he has made his decision to go to the right, all thoughts and ideas having any connection with the left road are banished from his consciousness." Mr. French went on:

"I suggest that each one of you will find that it adds greatly to his power and his clearness of expression and lucidity to look up psychology and this matter of suggestion."

Reference was made in passing to Prof. Hugo Munsterberg's "Psychotherapy." Mr. French then came to the second part of his subject, which he declared to be more or less allied with psychology.

"The principles and fundamentals of art are a great help also to advertisers," he said. "This is largely mechanical, largely psychological. In advertising it is of the first importance.

"You must think of your advertisement as a picture. The eye has to have something to attract it, or a person can't be impressed. The impression is dulled unless there is a distinctive something to attract the eye, like a picture.

"Certain elements or qualities go to make an advertisement attractive. These are the same that lie behind every piece of art, that is, true art. Some of these are form, proportion, balance, harmony, tone, symmetry, perspective, color. They are easy to get if in planning you have in mind their usefulness.

"The most common form in advertising is the oblong rectangle. This is a rule of proportion.

It can't be varied without bad results. Three to five, broadly, are the proportions. This is about the shape of a magazine text page. It is also the proportions of a properly constructed cross. Radiating from the point of intersection of the cross one may work out symmetry, harmony and tone.

"A harmonious tone is almost impossible with the use of half tone illustrations. Personally, I am very glad to see the renaissance of the line engraving, or the pen and ink sketch, in the work of advertising. It doesn't 'hog' all the attention given to the advertisement.

"This is a profitable line of study. Advertising may be made especially attractive, and one may trace the cause back to these principles. Some advertisers, I do not recall now just which ones, use lower case type in the display line to produce a harmonious effect.

"These principles of art have never been gathered together anywhere especially for advertisers. We have to read through a good many books, and perhaps only a few pages in each have direct bearing.

"One other line of study is well worth reading up a little, and that is optics.

"The power of the eye is extremely limited. It seeks to reject the printed matter we seek to impress upon it. It acts in a seemingly erratic manner in reading. It doesn't travel steadily, but in jerks and jumps. These are known as fixation points. The eye wants to stop; it goes on haltingly, painfully.

"The normal reading line is not over 3 1/2 inches wide. This the eye can take in with five, six or seven fixations. It should be divided up so that the eye can read it easily. Catchlines should be of such a nature that the eye can pick them up without conscious impulse—without any effort of the will. There should be no obstacles. This is of the utmost importance to the advertiser."

In response to a query as to the size of the type, Mr. French said:

"Type below nine-point is apt to be less agreeable than nine, ten or eleven. We must also consider the design. Only two or three designs of type face endure. All publishers have noticed how many series of type have dropped out of use. Almost all that have lasted are of the pure Roman style, because it is more agreeable to the eye. Caslon type, in use back when our fathers were born, is just as popular today."

Mr. French restated his thesis in the words:

"It is from science and pseudo-science, from art and physiological-psychological questions such as optics, the groundwork of advertising, that we can gather a great fund of strength and knowledge. Not only that, but it is a delightful field to grub around and study in."

Mr. French spoke throughout with much earnestness. His talk was highly appreciated by the advertising men present, among whom were a number of trade paper publishers. Questions were asked during the course of his remarks and a lively discussion ensued at the close.

After disposing of business matters the association adjourned, to meet again in the same place on November 11. All voted the October meeting a highly interesting and profitable one.

South African Wool.

Consul Edwin S. Cunningham, of Durban, has had a few inquiries from local firms seeking the reason why American importers do not buy South African wool direct from the Durban marts instead of awaiting its sale in Europe. This leads him to supply the following information:

"Durban is steadily increasing in importance as a wool-exporting port, as Natal and South Africa are growing in importance in the wool trade. Until with the last year there were wool marts in Pietermaritzburg, and possibly other places up country, but the majority of these are gradually drifting to Durban, which enables the producer to consign his wool to the port from which it is to be shipped to the foregin market, instead of incurring additional expense and delay by consigning it to some interior wool market.

"In 1908 there was exported through the port of Durban 24,117,180 pounds of wool, valued at $3,209,359; through the port of East London, 39,102,112 pounds, valued at $4,803,420; through Port Elizabeth, 32,195,275 pounds, valued at $4,137,367; and through Cape Town, 6,605,907 pounds, valued at $976,705. During 1907 the Durban wool exports were 20,264,098 pounds and during 1906, 17,870,336 pounds. Wool is exported chiefly in the grease state, though small quantities of scoured are exported, little washed fleece being shipped. Durban firms conducting wool sales and wool brokers are listed for reference at the Bureau of Manufactures."

The Cleveland Worsted Mills, Cleveland, Ohio, have placed a duplicate order of the Cleveland Plant with the Allis-Chalmers Company to be installed at their factory at Ravenna, Ohio. This will consist of a 1,500 k. w., 60 cycle, 3 phase alternator direct connected to a 34 and 54 by 48 of 100 r. p. m. Heavy Duty Cross Compound Corliss Engine. The necessary switchboard wiring and cables will also be furnished. The Geo. S. Rider Company are the Consulting Engineers in charge of the work.

Jenckes Knitting Machine Co.

The knitting machine business heretofore conducted by E. Jenckes Mfg. Co., Pawtucket, R. I., has been acquired by the Jenckes Knitting Machine Co., which will continue to build the "Invincible" knitting machine. The control and management of the Jenckes Knitting Machine Co. is exactly the same as the knitting machine department of the E. Jenckes Mfg. Co. and the organization at factory and main office at Pawtucket and at Philadelphia office is unchanged.

Grand Prize.

The Alaska-Yukon-Pacific Exposition has awarded to the General Electric Company a grand prize on general exhibit of electrical apparatus and completely furnished model apartment.

Recent Textile Patents.

BRAIDED FABRIC. 936,492. Ferdinand Thun and Wm. J. Luecke, Wyomissing, Pa.

BRAIDED FABRIC and Making It. 937,021. Henry Z. Cobb, Chelsea, Mass.

BRAIDING MACHINE. 936,356. Robert C. Rahm, Wyomissing, Pa.

COTTON CHOPPER. 936,136. Thomas J. King, Richmond, Va.

COTTON PICKER. 935,185. David M. Bailey, Wellington, Kan.

COTTON PRESS. 935,432. Frank E. Thomas, Wedgefield, S. C.

DYEING APPARATUS, Yarn. 934,543. Job Kershaw and John T. Shaw, Menston, Eng.

DYE JIGGER. 937,652. Fred Shaw, Whitefield, Eng.

FABRICS and Other Materials. Apparatus for Impregnating. 937,889. Emil W. Strohn, Buffalo, N. Y.

FABRIC FOLDING and Piling Mechanism. 937,566. James A. Butler, Winthrop, Mass., and Lorenz Flickm, Saylesville, R. I.

FABRIC. Making Link. 934,952. Felix Viano, Lexington, Mass.

KNITTING MACHINE. Automatic Circular. 935,981. Joshua D. Hemphill, Central Falls, R. I.

KNITTING MACHINE Yarn Feeding and Changing Device. 934,969. Joshua D. Hemphill, Central Falls, R. I.

LACE MACHINE. 934,914. Chas. Hickton, Long Eaton, Eng.

LOOM. 935,802. Francis A. Mills, Lawrence, Mass.

LOOM. 937,184. Eppa H. Ryon, Worcester, Mass.

LOOM. 937,165. Benjamin F. McGuiness, Worcester, Mass.

LOOM. Automatic Weft-Replenishing. 935,645. Randolph Crompton, Worcester, Mass.

LOOM DOBBY. 935,652. Albert A. Gordon, Jr., Worcester, Mass.

LOOM DOBBY. 936,479. Eppa H. Ryon, Worcester, Mass.

LOOM DOBBY. 935,667. H. le Doux, Worcester, Mass.

LOOM HARNESS Motion. 935,666. Hector le Doux, Worcester, Mass.

LOOM TEMPLE. 936,459. William H. Kynett, Battle Creek, Mich.

LOOM. Terry. 937,139. Henry Bardsley, Providence, R. I.

LOOM TERRY Motion. 936,310. John L. Davidson, Griffin, Ga.

LOOM. Shuttle Chaning. 936,949. Eppa H. Ryon, Worcester, Mass.

LOOM WARP Stop Motion. 937,136. Horace Wyman, Worcester, Mass.

LOOM. Weft Replenishing. 935,693. Eppa H. Ryon, Worcester, Mass.

LOOM. Weft Replenishing. 935,720. Horace Wyman, Worcester, Mass.

LOOM. Weft Replenishing. 935,671. Peter MacPherson, Worcester, Mass.

LOOM. Weft Replenishing. 936,510. Harrison N. Arthur, Lawrence, Mass.

LOOM. Weft Replanishing. 937,979. Horace Wyman, Worcester, Mass.

LOOM. Weft Replenishing. 939,980. Horace Wyman, Worcester, Mass.

LOOM SHUTTLE or Filling Carrier. 937,963. Orren A. Sawyer, Lowell, Mass.

LOOM YARN Stripper. Weft Replenishing. 937,838. Frederic W. Moore, Millbury, Mass.

LOOMS. Center Salvage Mechanism or Attachment for. 936,445. Albert A. Gordon, Jr., Worcester, Mass.

LOOMS. Bobbin for Filling Replenishing. 936,-524. Francois Dion, Manchester, N. H.

LOOMS. Thin Place Detecting Means for. 935,-099. Horace L. Freeman, W. Durham, N. C.

LOOMS. Thread Changing Apparatus. 936,324. Louis Jorrand, Aubusson, France.

LOOMS. Warp Stop Motion for. 937,888. Edward S. Stimpson, Hopedale, Mass.

LOOPING MACHINE. 936,898. Carlos Holly, Lockport, N. Y.

SPINNING and Twisting Machine. 937,450. Chas. E. Lombard, East Wilton, Me.

SPINDLE. Compound. 936,672. Francis Seymour, Paterson, N. J.

SPINNING and Doubling Machinery. 937,647. James Robertson, West Ferry, Scotland.

SPINNING. Doubling and Like Textile Machine. 938,375. Sebastin Z de Ferranti, London, Eng.

SPINNING RING. 937,089. Napoleon Payment, Manchester, N. H.

SPINNING RING Base. 938,392. Michael H. Maloney, Chelsea, Mass.

PILE FABBIC. Woven. 934,552. Hector le Doux, Worcester, Mass.

Recent Textile Trade Marks Registered.

"Parfait." Women's drawers, nightgowns, etc. Wm. Danenbaum, New York.

"Big 4." Rice-Stix Dry Goods Co., St. Louis, Mo.

"Gilberta." Ladies' outerskirts, petticoats, shirt waists, etc. Gilbert Mfg. Co., New York.

"Tri-State." Overshirts, overalls, etc. L. S. Baum-Gardner & Co., Toledo, O.

"Olivauto." Woolen cloth. American Woolen Co., Boston, Mass.

"Bengala." Silk piece goods and silk mixed piece goods. Susquehanna Silk Mills, New York.

"Helvetia." Piece fabrics of silk, linen, cotton, etc. Augustus H. Sands, New York.

"Hiawatha." Richmond Hosiery Mills, Chattanooga, Tenn.